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BETTER FRUIT

VOLUME VI

JUNE, 1912

NUMBER 12



"STRAWBERRIES IN THE NORTHWEST IS ONE OF THE CROPS WHICH PAY
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IN CARLOAD LOTS AS FAR EAST AS THE MISSISSIPPI RIVER"

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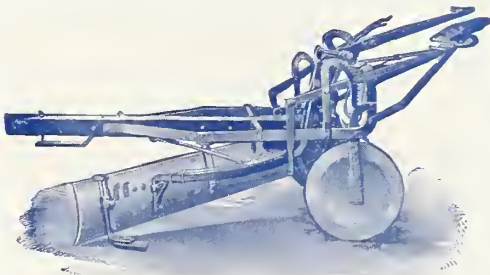
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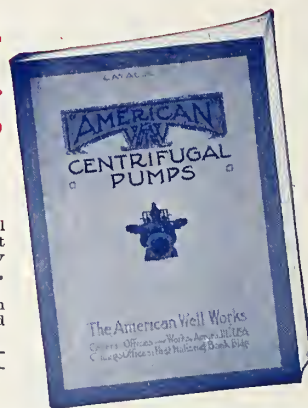
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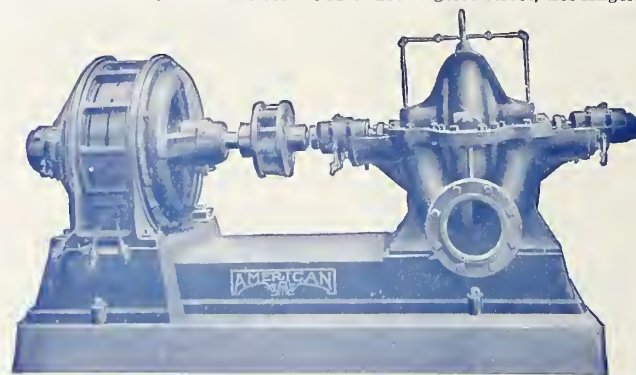
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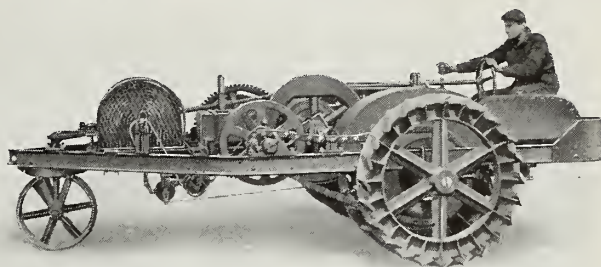
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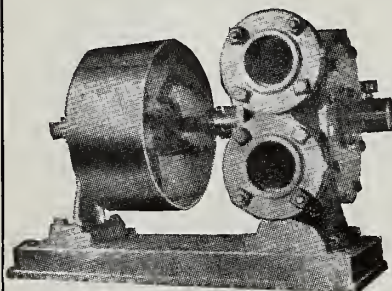
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"Better Fruit" accepts no patent medicine, quack doctor, liquor or any kind of advertising that does not interest the fruitgrower.

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The Control of the Codling Moth

By A. L. Melander, Entomologist, Pullman, Washington

THE codling moth passes through a series of transformations in the course of its life. The egg hatches as a worm or larva, which cocoons and then changes to the legless pupa, and finally emerges as the adult moth. The time required for this transformation varies with the season as well as with the individual, so that there may be two or three such generations of moths during the year. The first moths of the season appear shortly after apples blossom and lay their eggs near the young apples. Their worms begin to hatch two to six weeks after blossoming time, though most of the first brood worms do not appear till several weeks later. These worms must feed in the apple, cocoon, change to moths and lay eggs before the second generation of worms come into existence.

When the codling worm emerges from its egg shell it is small and delicate and hungry. It seeks about for shelter and for food. The blossom end of the apple provides both and actually attracts about 80 per cent of the worms, whether early or late in the season. That this majority of the codling worms are instinctively directed to the calyx cavity is probably due to the absence of a tough skin and the presence of the nectaries at this place. Some worms eat their way through the side of the fruit, even though this part be covered with a woolly coat or with a tough skin. Where two apples touch, or where a leaf overlaps the apple, the codling worm is apt to begin feeding. If this first meal proves tough or unpalatable it is rejected, the worm working it out of its mouth by emitting some silk from its mouth glands. This habit seems to have a most important bearing on the value of later sprayings in protecting the fruit.

The object of spraying is to coat the food of the newly hatched worm with poison. Since most worms attack the apple at the blossom end it is necessary to fill this part of the fruit with poison. This can be done only during the week or ten days immediately following the blossoming period, before the calyx lobes fold over. This spraying is called the first or calyx spraying and is the most important application that can be given. Sometimes, for the sake of thoroughness, the calyx spraying is repeated a few days later. This spraying lays a death trap which continues effective throughout the season, automatically taking its toll of four-fifths of the worms, whether of the first or second or third brood. While the first spraying primarily aims to fill the calyx cup, it coats the outside of

the apples and leaves as well. This exterior poison reduces the number of side entering worms of the first brood. Thus it is that a complete first spraying, assisted by the natural mortality of winter and spring, practically annihilates the first generation of the codling moth and effectually controls this orchards pest. Sometimes the very few worms that escape may produce an appreciable number of second and third brood worms. This seems especially apparent whenever a light crop makes the number of worms seem large in proportion. To ascertain whether to depend on the first spraying alone,

ground around the trees, as these give an idea of the number of moths laying eggs in the orchard. Just how many pupa cases are required to justify the spraying must be determined by each fruitgrower for himself. The accompanying diagram (Figure 3) shows the variation in the hatching of the codling worm for two seasons at North Yakima. In 1903 codling moth eggs began hatching about two weeks after blossoming time. The year 1905 had a cool, wet spring and the worms did not appear for nearly six weeks after the blossoming period, thus correspondingly delaying the time for the second spraying. The first and second sprayings comprise the campaign against the first brood of worms, and if perfectly applied should practically annihilate the moth.

Reference to Figure 1 will show that the first and second broods of worms of 1903 and 1905 were separated by an interval of several weeks, during which period no worms entered the apples. As the third spraying of the year should be given at the onset of the second brood it follows nearly two months after the second spraying. A useful rule is to give the third spraying four weeks after the first full-grown worms are trapped under the bands. The use of burlap bands around the tree trunks is advisable, not only as a measure for destroying worms but also to indicate the need for later sprayings. The effect of the third spraying wears off in a month, when the fourth spraying should be given. If the apples are to remain on the trees much more than a month after the fourth spraying a fifth application will sometimes be found desirable. More sprayings than these are useless, and now-a-days few growers give the full number above outlined.

What Is Meant by Calyx Spraying.—It should be noticed that the first spraying is given to fill the interior of the apple with poison, while all the other applications aim to coat the exterior of the fruit. The poison placed inside the blossom end remains there throughout the season; the spray on the outside skin wears off and must be renewed. The diagram of a sectional blossom as it appears at spraying time readily explains what is meant by calyx spraying. In the middle of the flower is a more or less pronounced cavity (4) which is hidden from view by a tight-fitting cap of stamen bars (2) and pistils (3). This is the inner calyx cavity which is to be filled with spray. The stamen bars are curved, stiff and woolly. They must be sprung apart by

Features of this Issue

CONTROL OF THE CODLING MOTH

ECONOMY A FACTOR IN COMMERCIAL
FRUIT GROWING

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MORE VALUABLE ASSET

PROPOSED STANDARD APPLE BOX
BILL

ASSOCIATIONS OF THE PAST AND
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INSECT AND FUNGUS ENEMIES OF
THE APPLE

ORCHARD MANAGEMENT
(Final installment)

keep some of the trees banded and observe whether many or few worms are trapped two or three months later. These bands catch about half of the worms. As the codling moth lays about forty eggs, a calculation can be made as to whether additional spraying would be warranted.

The second or calyx spraying is given weeks before the first brood of codling worms appears. By the time most eggs are hatching the young apple will have grown considerably, thus stretching the coating of spray on its surface. For this reason a second spraying may be deemed necessary to recoat the exterior of the apple and also the leaves. The exact time for this spraying can best be determined by observing the relative number of empty pupa cases at the surface of the



Figure 1—Magnified codling worm

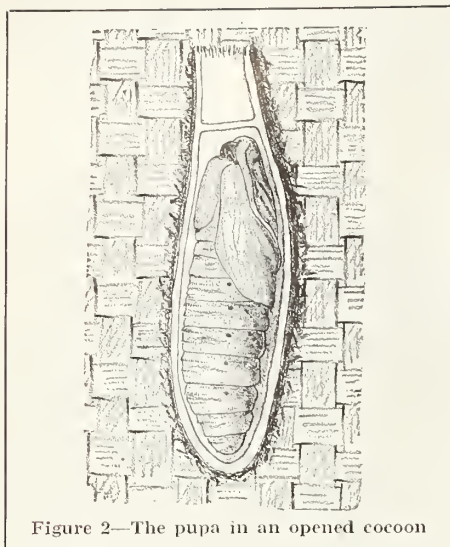


Figure 2—The pupa in an opened cocoon

the force of the spray in order to reach the inner calyx cup. A mighty spray, or a coarse spray, thrown straight up from the ground cannot penetrate beneath the stamens. In about a week the green calyx lobes (1) fold over, and then it becomes impossible to spray into the inner cup. While not all worms eat their way into the apple by way of the inner calyx cavity, undoubtedly some of them do, and in the matter of practical spraying our attention must be centered on them. The method of spraying that fills the lower cups has proved itself more valuable than numerous applications of external spray.

The Value of the Calyx Spraying.—Where the inner cup of every blossom has been filled with spray—and practically this can easily be done—the calyx spraying alone has controlled the codling moth over many hundreds of acres of orchards. One hundred growers asked how they spray and with what success reported as follows: 40, giving one spraying to 597 acres, lost 1 per cent of 161,181 boxes; 27, giving two sprayings to 459 acres, lost 4.5 per cent of 148,700 boxes; 15, giving three sprayings to 216 acres, lost 4.4 per cent of 42,388 boxes; 18, giving four to eight sprayings to 253 acres, lost 8 per cent of 72,010 boxes. Such results obtained by the practical fruitgrower indicate not only that the first spraying can be made so complete that it alone need be depended on, but furthermore that the best general results follow this method of calyx spraying. Those who

depended rather on later applications, probably thereby slighting the importance of thorough calyx spraying, averaged lower returns. A complete first spraying lessens the number of late "stings." The stings, resulting from worms biting through the skin before dying, are always abundant when late applications must be given. Such statistics do not mean that the man who has had wormy apples in the past, after spraying many times, can hope to improve his orchard by spraying less often if he continues to use the same method as before. His need is a more thorough application of the calyx spraying before he can afford to omit any of the later sprayings.

The recent study of the codling moth and the controversy it has originated have brought out, first of all, the importance of calyx spraying. Later sprayings may or may not be needed, but close attention to the first application is sure to repay the owner many fold. To give a thorough calyx spraying requires as much pressure as the pump will give. Eighty pounds will more than fill the calyx cup, but requires that each branch receive attention. Twice as much pressure is doubly good and three times as much is ideal. The increased pressure extends the range of the nozzle and lessens the time required for the spraying. The blossoms will drink up a certain amount of spray, and this amount is necessary, whether applied at 50 pounds or 300 pounds. In general, count on applying about one gallon of spray to every two boxes of expected fruit. High pressure spraying minimizes the chance of missing some blossoms and is economical in lessening the time and labor cost of the application. A mist-spray nozzle cannot spread apart the stamens unless within a foot or so of them, because the resistance of the air checks the penetration of the mist spray. This nozzle gives but a superficial coating, and because of the small opening through which the spray must flow unduly protracts the time of spraying. It is illogical to demand high pressure in the pump and then check it all at the nozzle. The mist-spray nozzles have proved far from economical and should not be used. Nozzles of the bordeaux type (Figure 5), which throw a coarse, penetrating, flat, fan-shaped spray, have a sweep effective for many feet. They deliver two or three gallons per minute at 200 pounds pressure.

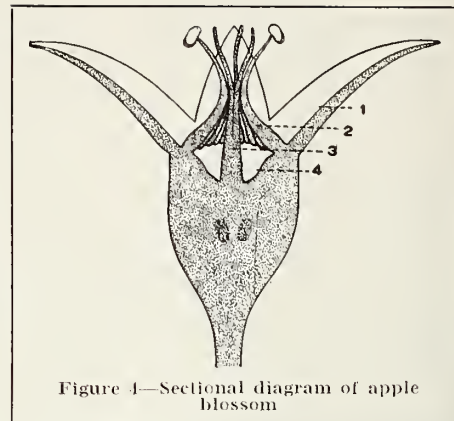


Figure 4—Sectional diagram of apple blossom

This is the only kind of nozzle suitable for calyx spraying, but an elbow coupling of about 45 degrees must be used to attach the nozzle to the rod. Most blossoms that are to set fruit point upward. Most spray must, therefore, be shot downward, but some must be thrown in every other direction as well. The angle coupling (Figure 6) enables every part of the tree to be reached by merely turning the rod in the hands. To facilitate holding the rod wrap it with friction tape. If the trees grow out of reach of the spray rod (i. e., over thirteen feet tall) the spraying should be done from a "tower" or elevated platform. Get above the blossoms and spray down, is very good advice. To spring apart the stamens and fill the calyx cup requires the coarse spray from the bordeaux nozzle, as high a pressure as practicable, the crook joint to direct the spray squarely into the blossoms, and an elevated platform from which to spray down into the highest flowers. These are the essentials in calyx spraying.

The spraying must be continued until it is certain that every blossom which is to set fruit is filled to the bottom with spray. At this point the tree is usually just ready to drip. Test the spraying by picking a blossom here and there, especially from the inaccessible places, such as the tips of the branches, and see if it is wet beneath the stamens. This can easily be ascertained by pulling off the stamens or by cutting open the flower. If the lower calyx cavity of any blossom is dry the spraying is not being effectively done, and 100 per cent returns should not be looked for. If you have varieties blossoming at different times spray by varieties. If the blossoms of a tree do not open together go over the tree twice. The "single spraying" means that every blossom is filled, and to be assured of this it is often desirable to repeat the calyx spraying after two or three days to catch blossoms that were not in best receptive condition at the time of the first application. A second application of the calyx spray is usually of much more value than any other spraying of the year. The calyx spraying must be finished before the flowers close up. If the weather is warm there may be less than a week's time for the spraying; if it is cold the blossoms may remain open ten days or more.

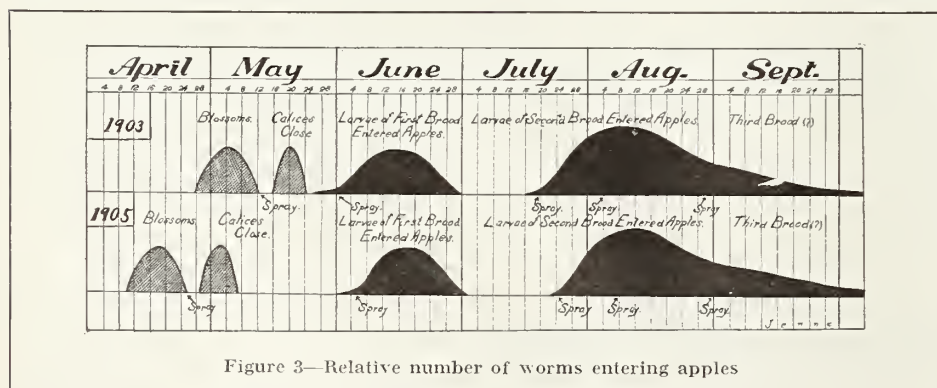


Figure 3—Relative number of worms entering apples

Arsenate of lead is now almost exclusively used for codling moth spraying. It is a most reliable spray under Washington conditions, remaining in suspension while spraying, adhering well when dried, being extremely poisonous to the young worms and giving freedom from scorching effects. Abundant evidence shows that one pound of paste arsenate of lead is sufficient for fifty gallons of water as a calyx spray for the codling moth. When a drop of this spray dries in the calyx cup sufficient poison is deposited to destroy any worms that enter. Later sprayings may be given of this strength or stronger. The dry powder form of arsenate of lead is about twice as strong as the paste. Arsenate of lead that has dried and caked must be carefully worked with a little water to form a paste again. A potato masher or churn dasher is useful in doing this. The paste must not feel at all lumpy when rubbed between the fingers. Arsenite of zinc powder is about three times as strong as the paste lead. It is easy to use, adhesive and has not scroched in our tests. It is claimed that arsenite of zinc is easily acted on by the stomach fluids, and is therefore a more rapid poison than arsenate of lead. If this is true it would make the zinc a valuable late spray for reducing "stings." A new spray that has the merit of cheapness is arsenate of iron. This is not on the market, but can readily be made. One pound of arsenate of soda (65 per cent pure) is dissolved in two gallons of hot water. One pound of sulphate of iron (called green vitriol or copperas) is similarly dissolved. When poured together the resulting greenish curds may be added to 200 gallons of water. This formula gives the same amount of arsenic as in four pounds of paste arsenate of lead.

robbing the spray of some of its value. The main place for a combination spray is in combating codling moth and apple scab, for the date of the second application for scab coincides with the calyx spraying for moth. However, recent experiments with sulphur lime have shown the practicability of controlling scab by a single application, given just before the tree opens its blossoms. This spraying alone has

checked the scab in our experiments so as to make the second application more expensive than the benefits would amount to. The calyx spraying demands a copious amount of liquid, probably twice as much as a scab spraying would require. The arsenical used is cheap, but sulphur lime is costly. The labor cost of another light application would probably be offset by the saving in sulphur lime. Hence

there is now no practical necessity for combination sprays. For scab districts it is advisable to spray with sulphur lime, 1½ degrees Baume (about one part of factory-made sulphur lime to twenty-five of water), just prior to the opening of the most advanced flowers, and follow with the calyx spraying of an arsenical for the moth about two weeks later.

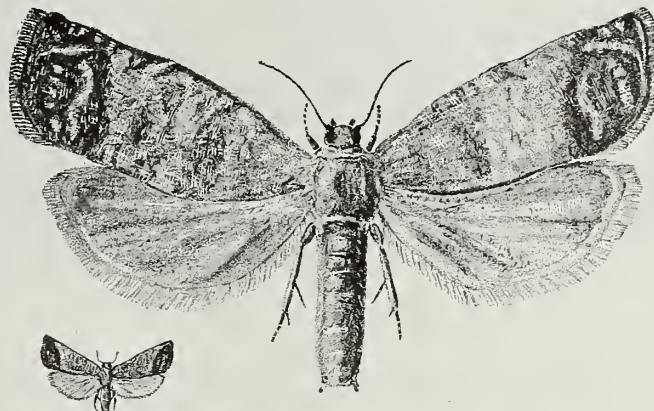


Figure 7—The codling moth, enlarged and natural size

Western Fruit Jobbers Association of America

This association is always alive to the requirements of the fruit business, from the standpoint of both dealer and grower. The following letter on co-operation will be of interest to our readers: "The subject of greatest importance today is co-operation, and unless the shippers give the railroads just and reasonable claims and inspections how can you expect prompt settlement of your grievances? Being only a few weeks until all perishable freight will be moving under refrigeration too much attention cannot be given this subject. Before starting to unload a car make a thorough inspection. Examine the ice in the bunkers, the contents, especially the top tiers, temperature, etc. Do not take railroad representative's word for condition, as they frequently have so many cars to inspect, the force being limited, it is impossible for them to give each car the careful inspection that you can. In case you find contents in poor condition call the representative and point out the conditions, and give your reasons why contents show damage. Then the railroad can trace shipment through from point of origin to ascertain whether car was delayed or ice was allowed to run low, etc. Always give the carrier's agent an opportunity to inspect and make report. Give a written statement to the carrier's agent, keeping a carbon copy for your file to be included with your claim papers. Bear in mind that a telephone communication with your local agent has no standing in law.

If a claim is to be filed do so as soon as possible, attaching original paid freight bill, bill of lading, invoice, copy of complaint originally filed with the carrier's agent, the agent's report, affidavit from the shipper showing condition of contents when loaded and any

other detailed information you may have on file. The payment of loss and damage claims amount to approximately thirty million dollars a year, and in order to be just and reasonable with the transportation companies see that your claims are just and that the carriers are at fault for the condition of your goods before filing same. The majority of the railroads today are endeavoring to make a prompt settlement of claims, and special attention is called to the new system installed by the Frisco Railway. Copy of their instructions can be secured upon application to their agent in your territory, or Mr. W. B. Biddle, vice-president, St. Louis, Missouri. In conclusion will say that the policy of the traffic department of your association is co-operation, and rule followed is, 'Be sure you are right, then go ahead.' If you will follow this policy with the transportation companies your differences will be adjusted more satisfactorily. Let us remind you that if you do not receive attention, and if your claims are not adjusted promptly, call for advice and assistance from the traffic department, as we are ready at all times to assist our members."

It is indeed a pleasure to glance through the beautifully printed pages of a booklet that is being sent out free to all "Better Fruit" readers who request it, by M. V. Richards, land and industrial agent, Southern Railway, Washington, D. C. This booklet is a treatise on stock raising in the Southeast. The introduction says that the stockman should look to Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Tennessee and Kentucky for the most profitable fields for raising horses, mules, cattle, sheep, hogs and poultry in the future. Each class of livestock is discussed under a particular head and beautiful pictures are presented to illustrate what is said. The booklet can be had free by writing to the above address and requesting it. *

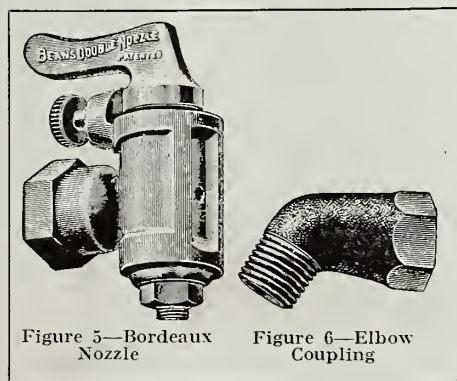


Figure 5—Bordeaux Nozzle

Figure 6—Elbow Coupling

In order to kill the codling worm the spray must actually be swallowed. The newly hatched worm seems to be particularly careful of its food and rejects distasteful substances. The arsenical spray, then, must have no taste or its effect might be lessened. For this reason it is not advisable to add to the codling moth spray a "repellant," such as bordeaux spray, sulphur lime, tobacco, soaps, kerosene emulsion, or even plain lime. By the same reasoning it is inadvisable to use the spray extra strong. Moreover, the addition of sulphur lime to the arsenate of lead produces more or less chemical change,



Ready for the Fifth Annual Rose Festival parade, June, 1911



Beautiful tree roses in Portland; their fragrance wafted everywhere

The Care and Management of Orchards

By Professor C. I. Lewis, Horticulturist, Oregon Agricultural College

Continued from last issue

The question is often asked, "Can we rejuvenate many of the old orchards of our state?" Possibly in some cases this can be done profitably, but in the majority of cases I doubt if we ever could make good commercial orchards from them. The only case in which it is worth while would be where the trunk and main part of the bodies of the trees are fairly sound and still reasonably low headed. It might be possible by some methods of grafting if the body or main branches are sound to still make fair trees, but it is very hard to keep them low headed up to the time they come into bearing. The majority of the apple orchards had better be ripped out. Peaches can often be rejuvenated, especially where the bark is still smooth and the bodies are sound, they would develop a new top. I have seen splendid results from the rejuvenation of cherry orchards that seemed almost hopeless. The prune, in many cases, seems hard to rejuvenate. In most cases where the bark is still smooth and sprouts can be forced out rejuvenation is possible. Where one plows up old orchards that have not been in cultivation for a number of years the result is that a large area of the feeding roots is destroyed. In order to balance up these old ones we should vigorously prune the tops, otherwise the trees will suffer not only in regard to their growth but in the class of fruit produced. I have known of apple orchards that for a period of five years after plowing up have not produced commercial crops, the fruit produced being of an unsalable nature, often being damaged by peculiar spots which are typical of trees treated in this way, and probably due to an insufficient supply of moisture and food.

There is no other line of orchard work that will pay as large dividends

as thinning. It is practically impossible with most types of fruit to grow highly desirable specimens without judicious care in this respect. Experiments have been conducted in various parts of the country which prove this conclusively. Some of the purposes of thinning are to get a better class of fruit and obtain desirable size, produce better color, make fruit often freer from blemish, produce annual crops, and at times even aid in controlling certain pests. Thinning may commence with the pruning. Apples, pears and peaches are thinned by pruning and also by hand thinning later. The amount of thinning will vary with the variety, with the vigor of the tree, etc. Most growers seem to prefer to delay thinning until the so-called June drop. Thinning is generally done by hand, although some men prefer to use

shears. Care should be used to leave the best specimens of fruit, removing all the malformed, diseased specimens. Many growers have found it to advantage to thin more than once, and thus throw the vitality of the tree into the production of the best class of fruit and have less culls to handle at picking time. We are experimenting at this station at the present time on various lines of thinning. With many varieties of pears and with the yellow, and possibly some of the red varieties of apples, it may be found to advantage to thin all fruit from some spurs and to leave two specimens on other spurs. We have found, in some cases at least, that such treatment has a tendency toward annual bearing, and the spurs that rest are very apt to produce fruit the succeeding year. No definite rule can be given as to the amount of thinning for each type of fruit. The point is to allow a tree to set only as much fruit as it can mature to a high degree of perfection. The distances that one will allow between individual specimens on a branch must vary with variety, age of trees, general vigor, etc. Apples that naturally run very large like the King of Tompkins County are not thinned as much as some varieties that tend to grow small like the Winesap. Some varieties have a tendency to set four or five specimens in a cluster. The Yellow Newtown is very apt to do this, while varieties like the Arkansas Black and the Comice pear will often very naturally thin themselves down to one in a cluster. As regards thinning varieties, do not always follow the same rule in the various localities. With some the center specimen of the cluster is apt to be the best, while in others the outside specimens are generally much preferred. Peaches, where the tree sets heavily, will need very severe thinning, often three-fourths of the crops must



Top worked old apple tree, showing the grafts set.



A splendid type of walnut tree, low-headed and spreading

be picked off. Cherries and prunes are generally thinned by pruning. Many varieties of plums, however, will need hard thinning.

Considerable interest is being manifested in dwarf fruits throughout the Northwest. For a home orchard, especially in cities and towns, and in many cases on the farm, they offer a very inviting field. They are much easier to take care of, especially as regards spraying, cultivation, etc., but require a little more skill in pruning. As a commercial proposition dwarf fruits offer an inviting field to be used as fillers in many of our orchards. Probably the dwarf pear is the most promising of the various dwarf fruits. For the pear the Angers and Portuguese quince are generally used. It is then preferable to double work these; first, to either Duchess or Koonce; the latter seems to be increasing in popularity; and then in turn to whatever varieties are desired, such as the Comice, Bartlett, d'Anjou, etc. Some of the points in favor of the dwarf are that it comes into bearing early, can be closely planted and used to good advantage as fillers in commercial plantings, and is thought in many cases to produce a superior type of fruit. They are easier for nearly all orchard operations, though requiring more skill in pruning. It must be remembered that the dwarf is produced in two ways, first, by using a stock which tends to retard growth, and, second, by judicious pruning. With nearly all dwarf fruits some pruning must be practiced, and all rank growth is checked so as to produce stronger body growth as much as possible. The dwarf apple is still more in an experimental stage than the pear. When placed on Paradise stock they make very small trees, and are of value more as an ornamental or for an amateur than for a commercial tree. Some people believe that the dwarf apple on Doucin stock will be used quite extensively, and they are increasing in popularity. Further than this the dwarf fruits are being used rather sparingly

as yet. The experiment station has been and is working at the present time on dwarf fruits for Oregon, and later will be able to give more detailed information.

The subject of variety adaptation in the Pacific Northwest is still in its infancy. Since the greater part of the acreage in orchards is still not in a bearing state it will be some time before final conclusions can be adopted concerning the best varieties to grow under the various conditions to be found in each locality. There is a tendency in the state to plant, in some cases, too few varieties, or rather try to adapt a few varieties to all conditions. For the principal varieties of apples the Spitzenberg, one of the most popular varieties, is one only adapted to deep, rich soils with warm, sunny exposure. This variety is subject to all the troubles a tree is heir to; it needs constant nursing and careful handling, and is only profitable when grown to a high degree of perfection, as the second and third grades of this variety are often a drug on the market. The

Jonathan apple is an apple of quite wide adaptability, but to be at its best should develop a high degree of color; it needs careful handling at the time of picking, as it develops core rot and breaks down rapidly if allowed to hang on the tree too long. The Northern Spy, in most sections of the Northwest, is of rather poor quality, but some sections of the Willamette Valley have been especially successful in growing this variety. It should not be placed on too rich or too heavy soil. We should discourage rank growth by the use of summer pruning and by avoiding giving the tree too much stimulation, caused by too intensive cultivation or irrigation. When highly colored and not overgrown it is a very desirable apple. The Gravenstein is a very popular apple, becoming a fall apple in most sections like the Hood River, Willamette and Rogue River Valleys, but having long keeping qualities in some of the coast counties and some of the uplands of Eastern Oregon. By careful picking its keeping season can be prolonged. King of Tompkins County has a great tendency to overgrow and water at the core, but when grown to a high degree of perfection it will find a ready market as a fall apple. The Wagener is especially valuable as a filler; it comes into bearing early and is productive. The Gano is an improvement in some ways over the Ben Davis, as it has a better color, and is thought by many to be of superior quality; while a low grade apple it has been profitable. The Rome Beauty is rapidly becoming one of the leading baking apples, and is steadily increasing in popularity throughout the state. It is profitable in most sections where it has been tried. The York Imperial is grown to considerable extent in the Grande Ronde Valley; it has not been tried to any great extent in other sections. The Winesap, while grown to perfection in parts of Washington, is grown sparingly in most Oregon districts. It has a tendency to grow too small. The Mackintosh Red is grown but sparingly in this state as a high



Results of close planting. These trees were headed well, but have lost one-half bearing surface because of crowding.

class Christmas apple; it would be adapted to high elevations and localities, or severe weather conditions. The Russian apples are usually adapted to more or less hardship, and often succeed on the high elevations and bleak exposures where others fail. The Delicious has been grown very little as yet in Oregon and is in an experimental stage. It is probably better adapted to higher altitudes, as in low altitudes the apple is often poorly colored and too soft. The King David is practically a new apple in Oregon. Only a few trees have as yet come into bearing, and it is too early to state just how promising this variety will be and to what conditions it will be especially adapted. It is a productive apple of pleasing quality and is worthy of trial, but, like other little known varieties, to a limited extent only. Of the light colored apples the Yellow Newtown is the leader; it has wide adaptability and is now being grown to a high degree of perfection in the Hood River, Willamette, Umpqua and Rogue River Valleys. The Ortley is a popular apple in the Hood River district; it is planted considerably with Yellow Newtowns as filler and pollenizer. It is a high quality cooking and eating apple. Grimes Golden is increasing in popularity, especially in the Willamette Valley. It is a high class apple; at times it grows rather small and occasionally has a tendency to drop badly, but it is one of our most promising varieties. Winter Banana has as yet little commercial rating. We believe it is more adapted to the high elevations, as the upper Hood River Valley, than to other sections of the state. White Winter Pearmain is grown splendidly in parts of Oregon; it is an apple of excellent vitality. It is a splendid pollenizer with practically everything we have tried, and in certain sections it is worthy of trying more than at present. The Rhode Island Greening, where grown to a good degree of perfection, is of good quality and should receive more encouragement. It is successfully grown in parts of Eastern Oregon, and is increasing in popularity in some sections of the Willamette Valley. As to pears, it is the general belief that varieties like the Bartlett, Comice and Bose are grown to a greater degree of perfection on lighter soils than on the heavier. Whether they will keep as well when grown on such soils is a question to investigate, and where it is reported that they have not kept as well when grown in such conditions it may have been due to the fact that the crop was compared in this way: Regions that nothing but light soils against regions which had both light and heavy soils. The Comice is being planted more than is justified; while it is high priced when grown to a high degree of perfection it is a shy bearer, coming into bearing late, and is not as much of a money maker as many other varieties. The Winter Nelis should only be planted on the richest of soils. Pear districts should try varieties of pears at present that are not commonly



Result of two scions on a small stock. The stock is decayed in the center and practically lost. One scions would have prevented this.

grown in Oregon, such as Glou Moreceau, Patrick Barry, Beurre Hardy, etc.

In varieties of fruits for the lower altitudes of Wasco, Morrow, Crook, Gilliam, Sherman and Umatilla Counties the selection can be made from the following varieties: Apples: Yellow Transparent, Gravenstein, Jonathan, Winesap, Rome Beauty, Wagener and Ben Davis. The latter for spring use. Pears: Practically any commercial variety, including Bartlett, Clapps Favorite, Seckle, Anjou, Winter Nelis. Cherries: Sweet, Lambert, Royal Ann and Bing; sour, Early Richmond, English Morello and Olivet. Prunes and plums: Use any of the standard varieties, such as Italian, Hungarian and Peach Plum. Peaches: Early and Late Crawford, Alexander, Lemon Cling and many other commercial varieties. Grapes: European varieties are generally covered and protected in the winter. Such are Black Hamburg,



"T" budding, showing bud stick, the bud removed, stock cut, the bud inserted, and bud bound.

Muscat, Rose of Peru and Tokay. The American varieties are Worden, Concord, Niagara and Delaware. Strawberries: Clark's Seedling is the best. Practically almost any of the early, medium and late varieties would give a good family supply. Raspberries: Cuthbert, Gregg, Marlboro and Cumberland. Blackberries: Lawton, Eldorado and Kittatinny. Currants: Fay, Cherry and White Grape. Gooseberries: Red Jacket, Champion and Industry. For the lower elevations of Union, Baker and Wallowa Counties the following varieties are found to do best: Apples: Yellow Transparent, Gravenstein, King, Jonathan, Rome Beauty, York Imperial, Gano, Ben Davis and Hyde King. Pears: Bartlett, Clapps Favorite and d'Anjou. Cherries: Sweet, Lambert and Bing; sour, Early Richmond and Olivet. Prunes and plums: Italian and Hungarian. Peaches: Any of the early varieties, such as Early Crawford, Hales Early, Alexander, etc. Grapes: Worden, Concord, Niagara and Brighton. Strawberries: Clark's Seedling, Sharpless and Magoon. Currants: Fay, White Grape. Gooseberries: Red Jacket, Industry and Champion. The higher elevations of Eastern Oregon counties suffer more or less from the severity of the winter and drouth in summer: Apples: The Russian varieties will be hardiest. These varieties in low altitudes are summer and fall varieties, but often in the high altitudes they are long keepers. Red Astrachan, Gravenstein, Duchess of Oldenburg, Wolf River, Wagener and Mackintosh Red are the best and most satisfactory varieties to plant. Occasionally nearly any of the standard varieties grow sufficiently well for family use. Varieties of some promise in such sections are also Rome Beauty, White Winter Pearmain, Delicious and Gano. Pears: White Doyenne, Seckle, Clapps Favorite. Peaches: As a rule they should not be grown. Occasionally such varieties as Alexander and Amsden June do very well. The Gibbs apricot is often successful. Cherries: Sweet, Lambert and Bing; sour, Early Richmond and Olivet. Raspberries: Cuthbert and Turners Red. Blackberries: Any of the standard varieties, such as Kittatinny, Lawton and Eldorado. Gooseberries: Red Jacket and Champion. Strawberries: Warfield, Clark's Seedlings and Bederwood. In the districts of Central Oregon like Goose Lake and Summer Lake probably any of the commercial varieties can be successfully planted. Last year a great many leading varieties of apples were found growing to a high degree of perfection, splendid in color and form, and with indications of long keeping. Such varieties as Spitzenberg, Winter Banana and Winesap were very promising. With the conditions that prevail in those regions it is probable that there is a long list of varieties that could be grown commercially.

The leading varieties of apples in the Hood River Valley are the Yellow Newtown, Spitzenberg, Ortley, Jonathan, Red Cheek, Arkansas Black. For



Illustrating method cleft grafting. Scions cut and shaped, scions inserted, the graft waxed and completed.

pears: D'Anjou is the leading variety and seems to grow well. Other varieties worth trying would be Bartlett, Patrick Barry, Howell and Glou Morceau. The varieties at Mosier are similar to those at Hood River. Very few other fruits are grown in these districts except for home use. For raspberries: Cuthbert, and for strawberries the Clark's Seedling. In the upper Hood River Valley variety adaptation is still in an experimental stage. The winter Banana seems to do well, and it may be that the Delicious will be good for that district; also the Gano, Jonathan, etc. In the vicinity of The Dalles we find a district especially adapted for prunes, peaches, cherries and grapes. This district above The Dalles is being cultivated to apples varieties of which are given in another list. For peaches the principal ones are Early Crawford, Late Crawford, Salway, Elberta, Muir, Orange and Lemon Cling, although many other varieties would do well. Cherries: The Royal Ann, Lambert and Bing do well. Grapes: Such varieties as Tokay and Muscat grow successfully and color beautifully.

The Willamette Valley is one of the hardest valleys concerning which to give advice as to the variety of fruit to plant, due to the large area of the valley and the many varied conditions that are found, and also owing to the fact that, with apples especially, the industry is still in its infancy. Apples: Yellow Newtown, Jonathan, Grimes Golden, Rome Beauty, Gano, Rhode Island Greening, Gravenstein, Ortley, Wagener, Spitzenberg, Vanderpool Red, Northern Spy. Pears: Comice, Bartlett, d'Anjou, Patrick Barry and Clairgeau. Worthy of trial are Glou Morceau, Beurre Hardy, Bosc and Howell. Peaches: Early Alexander, Amsden June, Waterloo, Triumph, Early Columbia, Hales Early, Mamie Ross, Lovell, Champion, Early Crawford, Early Charlotte, Tuscan Cling, Golden Cling, Muir, Late Crawford, Elberta, Globe, Fitzgerald, Salway. These varieties are named in their fruiting order. Some

of the most promising of the list are the Amsden June, Early Crawford, Early Charlotte, Mamie Ross, Muir, Elberta, Globe and Salway. Prunes: Italian. Plums: The Peach Plum and the Satuma. The Maynard is a good home plum. Cherries: Sweet, Royal Ann, Bing and Lambert; sour, Olivet, Montmorency and Early Richmond, and May Duke and Late Duke for Dukes, which are especially fine for local cherries. Walnuts: Franquette, Meylan and Mayette. Grapes: Worden, Concord, Niagara, Brighton and Delaware. Apricots and almonds are rarely grown, but such almonds as Grosse Tender and Languedoc should be tried. Red raspberries: Cuthbert, Marlboro, Superlative, Antwerp. Black raspberries: Cumberland and Gregg. Blackberries: Evergreen, Snyder and Mammoth. Gooseberries: The Oregon, Downing, Industry, Smith. Currants: Perfection, Fay, Victoria, White Grape. Strawberries: Gold Dollar, Sixteen to One, Magoon, Clark's Seedling, Autumn Bell, Marshall.

The principal apples grown in the Umpqua Valley are the Yellow Newtown, Spitzenberg and Jonathan. Pears have been planted sparingly as yet; the Bartlett, d'Anjou and Comice are in the lead. As this district is very early

more of the early types of cherries, pears, apples and peaches should be grown than is now practiced. These would find a local trade throughout the Northwest. Leading cherries are Lambert, Royal Ann, Montmorency, Early Richmond, Early Purple Guigne. The Olivet should be tried. Of small fruits I would advise, for strawberries, Gold Dollar, Everbearing, etc., while the Clark's Seedling, Magoon, Sixteen to One, etc., will thrive. Red raspberries: Cuthbert, Marlboro, Superlative, Antwerp. Black raspberries: Cumberland and Gregg. Blackberries: Evergreen, Snyder, Mammoth. Gooseberries: The Oregon, Downing, Industry, Smith. Currants: Perfection, Victoria, Fay, White Grape. Grapes: Worden, Concord, Delaware, Brighton. Possibly in some sections a few of the European grapes like the Muscat and Tokay will thrive.

Varieties for the Rogue River Valley.—Apples: Yellow Newtown, Spitzenberg, Jonathan, Winesap. Pears: Bartlett, Comice, d'Anjou, Howell, Winter Nelis and Bosc are commonly grown. Such varieties as Glou Morceau, Patrick Barry and Beurre Hardy are worthy of trial. Cherries: Lambert, Royal Ann, Olivet, Montmorency, Early Richmond, May Duke and Late Duke. Grapes: Muscat, Tokay, Seedless Thompson, Worden, Concord, Delaware. Peaches: Practically all the commercial varieties of peaches thrive in this district. Prunes: Few prunes are grown except for local consumption, such varieties being Italian and Petite. Apricots: Royal and Tilton are leading varieties. Almonds: Soft Shell, I. X. L., Languedoc, Drake's Seedless; while the Texas Prolific is recommended as worthy of trial.

All varieties of small fruits seem to grow to a high degree of perfection in the coast counties. Most of the pomaceous fruits are still in the experimental stage. Locations should be chosen that are not exposed to the strong ocean winds. The Gravenstein is thought to be one of the finest apples for these sections. Only a few of our commercial varieties are growing to a fair degree of perfection. Peaches,



Walnuts need lots of room for proper development. The tree on left is well headed, but the tree on right is a little too high.



The new top after first season's growth.

cherries and grapes as a rule probably will only be grown for home consumption.

The English walnut is found growing very extensively through Western and Southern Oregon; specimen trees and small plantings are found from Portland to Ashland. In nearly every section of Western Oregon one will find bearing trees; more especially is this true in the Willamette Valley. These plantings vary from a few trees to twenty or thirty acres of young orchards; and even much greater is found. These are also found growing over parts of Eastern Oregon as far as Baker. Probably the large commercial area of walnuts in this state will eventually be found west of the Cascade Mountains. At the present time the largest development of this industry is in sections of the Willamette Valley. In choosing the location for an orchard one should seek as deep rich loams as possible. The walnut is a heavy feeder and makes a very large tree; for that reason we would avoid shallow soils. At the present time we find the walnut growing successfully under many varied conditions, from silt loams along the river to the red hill lands. It is thought by some that many of the red hill lands are too light in character and that the nuts will not fill out well in such locations. It is probably a question of adequate food and moisture, and where the hill lands can fulfill these requirements there is no reason why the walnut should not succeed. One must in all cases avoid shallow soils. It is advisable to have splendid soil drainage, and while air drainage is not as necessary as with some fruits, since the walnut starts into growth very late in the spring, still it is advantageous in that it might ward off injurious frosts, especially in the fall. Give the trees plenty of room to

develop. They will probably need to be planted from forty to fifty feet apart.

Much difference of opinion is found among our growers concerning the value of grafted versus seedling trees. The writer firmly believes that if we are to put the walnut industry on a firm footing we will need to plant either grafted trees or first class seedlings, with the idea of top working a large percentage of these later on. The best class of seedlings are obtained by taking the seeds from an orchard of one variety, or from isolated trees that are producing desirable nuts. Where the varieties cross the variations at times become extreme. While one does not get as noticeable variations in walnuts as with apples and peaches nevertheless the variation does occur, not only as regards the type of nut but as to the bearing habits of the tree, such as too early fruiting, too late fruiting and the amount of nuts borne. The California growers, after twenty-five years of experience, realize that they must work on the grafted tree basis and must abandon the seedling. There is some question as to what is the best stock to use for grafted trees. Some prefer California Black, which has been making splendid growth in our experiment station plantings, some like the American Black, while some prefer the English root or its hybrids, with the preceding. It is reasonable to expect that we will find that various soils and locations will be adapted more to one than to another. It will take a few years to demonstrate this point. I would not advise one to plant nuts where the trees are to grow, as it is too expensive to care for them in this way, and a very few people will give them proper care.

Nuts can be germinated either in boxes or the method we use at this station successfully. According to this system, lay down some boards on the south side of a building, cover these with an inch or so of moist sand, place a layer of nuts upon this and cover with moist or damp burlap, sand, etc. This can be done in February, and in a few weeks nuts will germinate. For the nursery the bed should be rich, thoroughly prepared, plowed and harrowed until the lumps are removed, and the ground should be in such a condition as would form a good seed bed for small seeds. The young seedlings must then be planted in this soil in rows three to five feet apart and the plants set six to eight inches apart in the row. Care will be needed the first few weeks not to injure the young seedlings, as the roots are tender like asparagus, and if not handled carefully and soil lumps are allowed to form and are thrown against the seedlings many of the plants will be destroyed. With good cultivation a large percentage of these seedlings will be ready for grafting the following spring. Grafting is necessarily a rather precarious operation, as often not over ten per cent will live, while fifty per cent is an unusually good figure to reach. Top working is much more successful. Trees that are not to

be grafted in the nursery row can be set out as yearlings. In grafting walnuts one must be exceptionally careful to make smooth, clean cuts for absolute union, and have the graft hermetically sealed. The illustrations in this article show the methods used on both top worked and grafted trees. Top working is done with a modification of the cleft graft, greater precaution being used to have very close union and to protect the wound from decay. Grafting is done in the spring just as the sap starts to flow. It is very essential that the scions should be dormant.

Formerly very little pruning was done with the walnuts in this state; most of the authorities have advocated growing trees to a pole, so to speak, for the first two or three years. I believe that the California method is preferable, however. The trees are headed from three to four feet and from three to five branches are allowed to form, as is often practiced with apples. The branches, however, must be kept tied up for the first two seasons, and they should be headed back and caused to spread in much the same way as is advocated for apples in this article. Such practice gives us a low head, but one that does not droop as much as our present system, gives better spread and better bearing surface. The leaders will need some pruning from time to time to get ample light and check excessive terminal growth. All wounds should be waxed or protected carefully.

The French varieties are preferable—such as Mayette and Franquette; the Meylan is being grown some and is increasing in popularity. The orchard should be given as intensive cultivation as for apples, and will need cover crops from time to time. The nuts are harvested by shaking the trees or beating with bamboo poles. The nuts should be picked up immediately, the



New top after one year's growth, headed back and thinned.



The new top at the end of second season's growth.

cessfully in the Willamette Valley and other sections where almonds are not now grown. The soil requirements are much the same as for the peach, except that the almond is a much deeper rooted tree. While it will stand considerable hardship, nevertheless it responds greatly to good care and cultivation. The care is similar to that of the peach, except that in the pruning we thin out rather the excessive growth than so much heading in, as is practiced with the latter. The almond is generally propagated by budding on seedling almond roots. Occasionally the peach is used. Some of the most promising varieties are the I. X. L., Ne Plus Ultra and Texas Prolific.

While a great deal of interest is manifested in regard to filbert growing few plantings have been made upon which we can make careful observations. Undoubtedly there is a considerable area of land adapted to this nut, as one finds wild species growing prolifically through Western Oregon. It is a question yet as to the best soils to use. Some believe that the clay loams will produce large trees but will not be heavy bearers, and therefore not as profitable for planting as other classes of soils. We find the nut growing naturally on the deep, moist loams. Most authorities believe they should be encouraged to grow as a tree rather than as a bush. They should be given good cultivation and care. The best varieties are the French and Spanish varieties, such as the Barcelona and DuChilly.

Fifteen or twenty years ago the prune industry was overdone in this state. This was due to the fact that prunes were often planted under conditions that were not congenial. We did not understand handling the product properly; often the prunes were dried too much, and again the product was rough and very unattractive in appearance; a great deal of the product was insufficiently dried, so that it became moldy and decayed, and we tried to force this, then unknown, product upon the world's markets. The present outlook for the prune is very encouraging, and more people should become interested in this industry. It offers one of the most attractive investments in this state at the present time. It can probably be said that when one considers the cost of land, cost of production, etc., the prune offers one of the most attractive investments to be found in Oregon. One of the prominent prune men this year remarked that he could have sold twice as many prunes had he had them, without lowering the price. The present indications are that the prune will pay larger dividends in the future than they are even paying today. The world's markets are thoroughly familiar with the Oregon prune, and are demanding more and more of the fruit. They are easy to handle and can be put up in an attractive way. The principal prune grown in Oregon is the Italian, though some Petite, Hungarian, Silver, etc., are grown. At The Dalles and parts of Eastern Oregon



The new top headed back after second season's growth.

husks removed and spread in the sun to dry. They can be put on racks similar to those used for prune drying, and the nuts will be dried more rapidly if placed on wooden horses than if placed on the ground. It will be necessary to grade the nuts when the crop is large; this can be done with mechanical graders. The nuts are put in cartons or placed in sacks and sold in this way. No bleaching or sulphuring is being used in this state. There is quite a demand for nuts at the present time, ranging from twelve to twenty cents a pound, and we cannot begin to supply the demand; it is doubtful if we ever can be able to within the next twenty years, and perhaps never, since we are importing more and more nuts every year. Fair profits can be expected from nut growing. Trees will begin to bear all the way from four to seven years of age. The yield of nuts varies extremely, but probably from \$100 to \$200 per acre can be realized from this industry. While the profits may not be as great as from some other lines of fruit growing, nevertheless it has its advantages in that a man can take hold and handle a much larger acreage than he could of most fruits; the expense of handling per acre is also less.

The almond is very exacting in its requirements, especially in regard to frost. While the tree is hardy it blooms so early in most localities as to be nipped by spring frosts. However, there are a few localities in our state adapted to this nut. There are some regions along the Columbia, some of the valleys of Eastern Oregon and portions of Jackson and Josephine Counties. At Merlin, Oregon, considerable quantities of these nuts are now grown. It is claimed by some that such varieties of almonds as the Languedoc and Grosse Tender can be grown suc-

like Cove prunes are raised largely for shipping green. In the Willamette and Umpqua Valleys the prunes are raised principally for evaporating purposes, although much of the product is being shipped green. Undoubtedly years of light prune crops in the East will find trainloads being shipped green from the valleys of Western Oregon. Salem is perhaps the center of the prune district, although one finds large areas in the vicinity of Newberg, Sheridan, Dallas and other cities. The prune likes a well drained loam, and does especially well on our rolling foothills when deep and provided with good air and soil drainage. While they can be planted fifteen to sixteen feet apart at the time the orchard is set by the time the trees come into heavy bearing they will need greater distance; probably twenty-five feet would not be too great a distance at which to plant. The ground should be given especially good preparation in the spring, followed by frequent summer cultivation. Where extra good care is given up to the middle of July many of the growers cease cultivation from that time on, claiming that by this method they get a standard prune and one with tender skin. This can only be done where good care has been given to the orchards during the spring months. Prunes are allowed to drop upon the ground and are picked up in boxes. Generally five cents a box is paid for such work. They are then usually dipped in boiling water, rinsed in cold water and graded. The fruit is then placed on trays and put in a drier, where evaporation takes place. There are many types of driers. Average heat is started at from 80 to 120 degrees and gradually increased to 180 degrees. It will generally take about thirty-six hours to dry prunes well. After dry-

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Aid of the Government to Agricultural Extension

By George S. Wood, National Soil Fertility League, Chicago

ONE of the most significant steps taken toward development and conservation of the nation's national resources since the establishment of the Department of Agriculture is the report of Congressman Lever of South Carolina, from the committee on agriculture to the house, reviewing the bill prepared by the National Soil Fertility League and the executive committee of the Association of American Agricultural Colleges and Experiment Stations, and introduced by him, for the establishment of agricultural extension department, and with minor amendments unanimously recommended for passage by the committee on agriculture.

Referring at length to the fruitful work of the Department of Agriculture, the state agricultural colleges and the experiment stations, Mr. Lever voices the opinion of the committee that, as only a very small per cent of the people can enjoy the direct benefits of these institutions, it is evident that the system of federal aid to agriculture is yet incomplete: "The colleges deal with ideas, the stations with facts; the colleges teach theories of agriculture, the stations prove good theories and disprove poor ones." The report proceeds with the committee's expression of belief that this bill is the next logical step to give this country the most comprehensive system of governmental aid to agriculture in the world. "The central idea of the bill is to bring to the farmer, upon the farm, this information, these scientific truths, and those better methods of agriculture which the colleges and stations have been and are gathering. Past legislation has resulted in the accumulation of valuable agricultural information; this bill proposes to disseminate it in the most practical and far-reaching manner."

Commenting on the endorsement the movement and bill have received by the leading agricultural thinkers of the country, the rural press, influential business associations, agricultural organizations, President Taft, in his address at the Kansas City Conservation Congress and in other directions, the report suggests that this cannot be regarded as committing the government to any new or untried policy, seeking as it does only to give fuller force and more complete effect to agencies already created by congressional action. Reference is made at length to the recognition by every leading country of Europe of the principle of agricultural extension work through field demonstration. The committee calls attention to the mandatory provision that seventy-five per cent of all moneys available under the act shall be expended each year for field instruction and demonstration and the initial appropriation of \$10,000 annually for each state is unconditional. The committee states that it is informed and believes that this system of bringing home to the actual farmer upon his actual farm the best methods of agri-

culture is working a revolution in the agriculture of the South. The proposed legislation intends to do this same kind of work on a bigger, broader and better scale, under the direction of state rather than federal authorities, believing that each state has its own peculiar problems which can be worked out best under local environment.

The committee submits for the information of the house the following brief analysis of the bill by sections: Section 1 authorizes that agricultural extension departments may be established in each state in connection with its land grant college or colleges. Section 2 defines the object and duty of these agricultural extension departments to be to give instructions and practical demonstrations in agriculture and home economics through field demonstrations, publications and otherwise. Section 3 makes frankable printed matter and correspondence for the furtherance of the purposes of the act, issued from the agricultural colleges or by agents of the extension departments thereof. Section 4 is the appropriating section of the bill and provides that a sum of \$10,000 shall be appropriated annually to each state, which shall assent to the provisions of the act. This annual appropriation is a straight, unconditional appropriation to the several states, and amounts each year to a

charge upon the treasury of \$480,000. The additional sum of \$300,000 is appropriated for the fiscal year 1914 and an annual increase of this appropriation of \$300,000 a year, over the preceding year, for a period of nine years is provided until the total amount of additional appropriations will be the sum of \$3,000,000 annually. But these additional appropriations, or this sum of \$3,000,000 annually, is to be allotted among the several states in the proportion which their rural population bears to the total rural population of the United States, as determined by the next preceding federal census. The bill provides that no state is to be entitled to any part of its allotment of the additional sum until its legislature has provided for the establishment of agricultural extension departments, as provided in section 1 of this bill, and it requires further that no state shall receive of these additional appropriations a sum exceeding the sum appropriated by its legislature for that year for this purpose.

The committee submits a table showing the total population of the United States by states, and the total rural population by states, and the amount of these additional sums to which each state will be entitled under the basis of allotment as provided in the bill when the act shall mature at the end of ten years, to which must be added for each state the sum of \$10,000 unconditionally appropriated. The table is as follows:

	Total Population	Total Rural Population	Pct. Rural Population United States by States	Amount Appropriation Allotted Each State \$3,000,000
United States	91,972,266	49,348,883	53.7	
Alabama	2,138,093	1,767,669	3.58	107,400
Arizona	204,354	111,094	.29	8,700
Arkansas	1,574,449	1,371,768	2.78	83,400
California	2,377,549	907,810	1.84	55,200
Colorado	799,024	394,184	.80	24,000
Connecticut	1,114,756	114,917	.23	6,900
Delaware	202,322	105,237	.21	6,300
Florida	752,619	533,539	1.08	32,400
Georgia	2,609,121	2,070,471	4.19	125,700
Idaho	325,594	255,696	.52	15,600
Illinois	5,638,591	2,161,662	4.38	131,400
Indiana	2,700,876	1,557,041	3.16	94,800
Iowa	2,224,771	1,544,717	3.13	93,900
Kansas	1,690,949	1,107,159	2.43	72,900
Kentucky	2,289,905	1,734,463	3.51	105,300
Louisiana	1,656,388	1,159,872	2.35	70,500
Maine	742,371	360,928	.73	21,900
Maryland	1,295,346	637,154	1.29	38,700
Massachusetts	3,366,416	211,049	.49	14,700
Michigan	2,810,173	1,483,129	3.01	90,300
Minnesota	2,075,708	1,225,414	2.48	74,400
Mississippi	1,797,114	1,589,803	3.22	96,600
Missouri	3,293,335	1,894,518	3.84	115,200
Montana	376,053	242,633	.49	14,700
Nebraska	1,192,214	881,362	1.79	53,700
Nevada	81,875	68,508	.14	4,200
New Hampshire	430,572	175,473	.35	10,500
New York	9,113,614	1,928,120	3.91	117,300
New Jersey	2,537,167	629,957	1.28	38,400
New Mexico	327,301	280,730	.57	17,100
North Carolina	2,206,287	1,887,813	3.83	114,900
North Dakota	577,056	513,820	1.04	31,200
Ohio	4,767,121	2,101,978	4.26	127,800
Oklahoma	1,657,155	1,337,000	2.71	81,300
Oregon	672,765	365,705	.74	22,200
Pennsylvania	7,665,111	3,034,442	6.15	184,500
Rhode Island	542,610	17,956	.04	1,200
South Carolina	1,515,400	1,290,568	2.62	78,600
South Dakota	583,888	507,215	1.03	30,900
Tennessee	2,184,789	1,743,714	3.53	105,900
Texas	3,896,542	2,958,438	5.99	179,700
Utah	373,351	200,417	.41	12,300
Vermont	355,956	187,013	.38	11,400
Virginia	2,061,612	1,585,083	3.21	96,300
Washington	1,441,990	536,460	1.08	32,400
West Virginia	1,121,119	992,877	2.01	60,300
Wisconsin	2,333,860	1,329,540	2.69	80,700
Wyoming	145,965	102,744	.21	6,300



One of many Portland front yards



The Queen of Flowers

Associations of the Past and Present

By C. T. Barker, New York

THE men of the Pacific Coast States who are devoting their energies to the growing and distribution of fruit are organizing themselves into a government. Or is the word government too serious a word? They have created, or at any rate they are creating associations in the different fruit districts—the orange growers of the South, the grape and wine growers of the South, the peach and apricot growers of the North and South and the apple growers of the North—to protect each other and to effect economies. These associations in turn have found that they have a mutuality of interests—that they can better protect themselves and effect economies by union than by separation. These being the facts, it would seem that “government” is by no means too serious a word to use in describing the intended operation. It seems clear that when any large body of individuals, or a number of bodies of already associated individuals, meet upon a common ground they must organize a government or they cannot remain in association; an association without defined rules is not a government; an association with defined rules is a government. I have tried to make clear that an association, effective for its objects, is, and must necessarily be, a government, for it is my intention to show that the fruitgrowers of the West have, in the experiences of mankind since the dawn of history, a blazed trail toward success or failure. Never, indeed, have ten men, or two states, or two kings, agreed upon mutuality of operation since civilization began, but they have succeeded or failed from causes as readily deducible as when two from four are taken two are left.

One would fancy after examining, even casually, the articles printed, the newspaper accounts, the drafts of by-laws that the fathers of the association movement among agriculturists gener-

ally, East or West, look upon themselves as men of genius so extraordinary that they do not need to take heed of the experiences of men in forming themselves into associations, but are able to create from their own minds and the trivial experiences of the fruit-growers of California a system of government which will endure. One would fancy that they think themselves superior to the fathers of this republic who canvassed history for its lessons before they put pen to paper for the writing of the constitution. One man, not by any means the least gifted of those who are giving their attention to the fruit problem of the West, replying to a question as to how the Coast was progressing in its organization said, “We will learn by our errors.” He might as well have said that he built his irrigation plant without knowing that water would not run up hill, and that by his errors he proved that it wouldn’t. Wise men, statesmen if you will, take that which the experiences of mankind have proven to be true and build from that point. Even as a mechanic, no matter how great his genius, could not construct a steam engine, much less improve upon one, unless he had knowledge of what former mechanics during generations had accomplished, so will the builders of associations fail in building effectively unless they study the causes entering into the success and failure of past associations of men. Just one further word upon this point. Empiricism is a method by which new knowledge is revealed. A definition could be found in picturing a physician who, in treating a patient for boils, starts with A in the pharmacopœa and doses with everything down to Z. A more rational plan, which readily suggests itself, would be to search the books wherein are recorded the past experiences of physicians in treating boils and dose accordingly. The place for empiricism in mechanics, medicine,

government or fruit associations, which are but a phase of government, is exactly at that point where the past experiences of mankind end. He who invokes empiricism before science has been exhausted is well held to be, in science or government, foolish. Given a set of circumstances the obvious course to pursue may be the wise course and then again it may not be. Scarcely a set of circumstances can be presented, in the association of men with men, but has been paralleled a thousand times in recorded history. It would be well, then, to examine the records before we come finally to decisions, for otherwise we might come to condemn ourselves for committing errors which have been committed a thousand times before and which have brought ruin after them. Let no man think himself wise enough to act without knowledge of the past acts of men. If indeed we must, in the words of the gentleman above referred to, “learn by our errors,” let us learn by the errors of the dead. Just here I hesitate in presenting historical and other recorded analogies of the fruit marketing associations of the West. I must needs give myself the appearance of an erudition which is far from mine. I will quote authorities whose books I have not read save in extracts. I will mention records into which I have not delved save with the mind of real students of history, of whom I am not one.

Men have associated themselves for mutual protection and other purposes from the dawn of history. Their associations may have been of the twenty, who nominated and paid one of their number to draw water from a well, or it may have been that association of men who composed the Roman Empire. Each acted for a time and was disrupted even as peoples are being formed into associations today and being disrupted, so has it always been.

Yet take it for truth, obvious but important, that no association, great or small, was ever disrupted without cause. There was a cause or causes. Sometimes it came from the pressure of competing associations; with these we have some concern. But far more often the cause, or causes, of failure lay in the rules (constitution) under which associations were organized. With this the fruit associations of the West have great concern. Let the reader have no fear that when I mention Carthage I am going to take him into the dry-as-dust pages of history wherein none save horned spectacled savants find pleasure. Nothing of the sort. I am simply to tell a little story which has in it a lesson, a very pertinent one, for the Western fruit co-operator. Carthage was governed by two bodies, each exercised executive functions as well as legislative. Very naturally these bodies each sought for the greater power. Very naturally, too, individuals in each of these bodies sought for greater influence than his neighbor. Thus, between the agitation resulting from the clashes of the two bodies and the turmoil of the individuals, Carthage, with its wise laws, had an extremely indeterminate and confusing manner of executing them. The governing power sent a very able soldier named Hannibal to prosecute a war against Rome. The division of council at home, due to the fact that power was in the hands of a chaotic body, made Hannibal subject to a myriad of orders given, and as quickly countermanded. Because of an ineffective executive his supplies were invariably delayed. When at length he returned defeated he said, "I have been successful against the Roman, but have been defeated by the Carthaginians."

We all know that Carthage fell. History, in no uncertain words, gives us the cause of its fall. It fell because it lacked an effective executive to give direction to its strength. It lacked a dominating power to control the traitors in its own councils. Does the Western fruitgrower fancy he will have

no traitors in his councils? Let us see as to these Carthaginian traitors. The Roman historian Appian says that there was a pro-Roman party in Carthage, headed by one Hanno. He was wrong, though he is to be excused for thinking so, for the acts, though not the words, of Hanno were pro-Roman enough. While Cicero was making the Roman senate house ring with his "Delenda est Carthago, Carthage must be destroyed, Carthage must be destroyed," the Roman agents were all too cognizant of the disruption in the councils of the Carthaginians and had the ability to foment further trouble. It was not hard, in that period of the world's history any more than it is in this, to show a man how easily he can make a profit at the expense of his associates and the Roman agents made Hanno their tool. They knew it was not difficult to make a traitorous tool effective when a dominant power is absent. It was through Hanno that Hannibal's war supplies were interrupted—his plans betrayed to the enemy. Does the Western co-operator fancy that there will be no Cicero crying the "Delenda est" of open trade war against your association, no secret agents offering your associates an extra margin of profit to seduce them to desert you? The men who are now taking the middle profits from the agriculturists of the country will not give up without a fight. If you do not control your associates by legal bonds which bind them to a strong central authority they will seduce them.

Athens once dominated its environment, even as the fruit associations of the Coast hope, and have a right to hope, to dominate their trade. It rose to prosperity, its ships carried the world's traffic. Its market was the market place of the ancient world. It became great under wise laws efficiently administered, a small council of its legislative senate held the executive power. Over-prosperity brought decadence into the senate house, and when Sparta, hungering for the wealth of the Athenians, made war the executive

power lapsed into a debating society. "In a veritable chaos of divided council Athenian dominion went down"—(Polybus). Why? Because of divided council; division of council prevailed because the fundamental laws gave insufficient authority to the central executive. I am quite well aware that there will be those who will resent my deductions from the history of Athens, but I think that even these will agree, should they re-read with a desire to grasp the essential causes for the catastrophe. Historians have been more prone to exalt the military virtues of the Spartans than to detect reasons for their successes in the weakness of their opponents. The people of Athens gave into the hands of their executives ample authority for times of peace, but insufficient for a crisis of war. Do the fruit-growers of the West look for peace? Rome increased in greatness under the centralized authority of the emperors from Augustus to the Antonines. It maintained itself successfully against Goth, Hun and Vandal. Even weak emperors maintained it when their authority was undisputed, but when authority was divided between the emperors and the captains of the Pretorian guards Rome fell, emperors of the east and west, and at times of the north and south, quarreled and fought with each other. Rome went down as inevitably as your fruit associations will go down if each individual co-operator does not surrender to a strong central authority his right of independent action.

No better illustration could be used by which to measure the district co-operative associations of the Coast and East in their efforts to unite in one association than to use Italy during the Middle Ages. One association of princelings and cities followed a like association in attempts to make head against the Hapsburg and Bourbon-Valois pressing upon them from the north. Their associations for the most part amounted to nothing in force, for each member declined utterly to surrender



Portland will hold her Sixth Annual Rose Festival on June 10 to 15, 1912. The above picture shows the children in the Festival parade last year



The Multnomah Hotel will be the headquarters for the Elks' Convention, which will be held in Portland July 9 to 14, 1912. This is one of the largest and most magnificent hotels on the Pacific Coast

anything of power. They could not agree as to who should lead in war or as to the division of expense. Occasionally a great man arose who by personal ability dominated his fellows and created a strong central authority—a Cæsar Borgia or a Duke of Savoy—but upon his death the usual chaos returned once more. Not until the century just passed did the Italian princes and greater or less nobles see that, if ever prosperity was to rule in Italy, each must give up his independence of action and delegate it to a constitutional executive. The result is a united and inseparable Italy, at peace within its borders almost for the first time since the Vandals sacked Rome. Did I hear some fruitgrower say, "The idea of going back to mediæval Italy to prove that I must grant to my association the right to issue a mortgage against my property and the sole right for all time to come to market my product at whatsoever price seems good to it." To which observing fruitgrower I express my thanks and tell him that he has deducted the basic fact that a central authority is not a central authority unless it possesses the taxing power. It was the very objection to granting to the central and executive government the taxing power which kept Italy in a turmoil of blood and starvation for many a century. The fruitgrowers of the West must grant to the central council the taxing power, without the right of retraction, if it is to be strong enough to meet the exigencies of time. For the proof of this let us turn another page of history, but first let us inscribe a jocularly pointed upon the Germans.

You remember how Charlemagne exercised something of the same authority in Europe that should be

granted to the Central Fruit Association of the Coast. 'Tis true he grasped power with a ruthless hand, but at the same time he exercised it wisely. Europe knew no peace since the Roman peace more grateful than was his. He made wise laws and executed them wisely. But one day he died and with him died the central authority he had created. His empire was divided and subdivided, and in the course of the centuries was subdivided many times again. Out of the ruins France evolved and Burgundy evolved. The history of continental Europe was, for long, largely the history of these states. Does someone, remembering that we now have a Germany, ask me what was then Germany? I do not know. No one else knows, unless it be some maling historian turning over the useless records of petty countships, forgotten baronies and trifling dynasties, lifting their heads so insufficiently high that even a peering delver into the musty nothings of the past overlooks them; for which you and I may well be thankful. Why France and why Burgundy and why not Germany? History tells us why with the certain clarity with which history always replies to the intelligent questioner. In the answer it may be that we will see why some growers and co-operators will find it hard to give up their independence to the central council.

We, presuming we are Anglo-Saxon, are like the German, Teutonic. A stiff-necked breed, the Teutons were. So little did they believe in co-operation or a community of interests in their early tribal days that they lived, each family apart, in a clearing in the forest, and only came together for purposes of war. They were individualists of a

rank sort, believe me, and some of their early characteristics will, I fear, be found among the fruitgrowers of the Coast before a sufficiency of authority is surrendered to an association council. The Teutons for the most part did not come under the direct civilizing influence of Rome as did the Gauls and Celts of that part of Europe now known as France, Spain and England. Unlike these they had not learned under the Roman influence the lesson that a strong central authority is, for the majority, a guarantee of safety and prosperity. The Gaelic people, who became the French and the Burgundians, supported a strong man, or institution, when they found one, and under Hugh Capet and his descendants waxed mighty in the land. The Germans, on the other hand, hated to see any one individual tower above another; when they recognized an able head they united only for the time it took to crack it. This is putting into unacademic language the essential truth which made the German peoples ineffective for a thousand years. They did not unite. It was individualism carried to the "n"th power. During the larger part of those years the German states are the jokes of the historian—if a serious historian ever could be said to joke. Every dominant state, from the early Capetian Burgundians to the English in the American war, used the German peoples as recruiting ground for mercenary soldiers. 'Twas said that Germans fought in every battle for ages and yet won not a victory for themselves—not always their pay. Their petty states, disunited and at war with each other in times of international peace, were playthings for a foreign conqueror in war times. When they attempted a union it fell before created, for no man would surrender authority. Napoleon held even the Prussian as beneath contempt: "Every German princeling would sell out his fellows for small favours." But see what the Germans have done in the few years since the founding of the central authority of the German empire. In thirty years their commerce has grown proportionately more rapid than has ours. Their industry is immensely productive because it is well directed; it is directed by a central authority properly endowed with power. Without that central authority their boasts would be the jests of Europe did they utter them. With that authority they have made the nations of the world afraid. Before you refuse to grant to your central council ample and untrammelled authority, fruitgrowers of the Coast, study Germany.

I think it is sufficiently clear already that no effective central power can be created without the granting to it the right of taxation. It is clearly impossible to legislate were the legis-



Thousands of these prolific gardens in the Spokane Valley, Washington

lature compelled to go about to the citizen, hat in hand, every time capital is needed. But to prove with a historical citation or two might perhaps be of service, and I cannot do better than lead you into the Netherlands at the time when they were growing in wealth and importance under Philip of Burgundy. Briefly I shall picture the Spanish domination. That wise co-operator William the Silent will be pointed out, and then the decline of the Netherlands from the first power of the age to a mere province. On the way I shall contrast two commercial corporations, the one the Dutch East India Co. and the other the British East India Co., the originators of our modern corporations. I feel that in the history of these I can surely show by analogy the measure of power the fruitgrowers of the West must grant to their associations if they expect to realize their objects and not have their efforts made the jest of a commercial world. The states of the Netherlands consisted of seventeen fruitgrowers' unions—did I write fruitgrowers' unions when I meant independent states? In the centuries prior to the time of Philip of Burgundy these seventeen states had by purchase, negotiation and war wrested from the overlord a not inconsiderable measure of liberty. They were making money and making it fast. Already they dominated the trade in fish and the manufacture of cloth. Already they had advanced as far as the fruit associations on the Coast in that they had established brands of both cloth and packed fish, and upon the package the government put its stamp and the world accepted the O. K. mark as evidence of excellency. Under the suzerainty of the Burgundian the seventeen states lived and waxed fat. They had a loose union or association which they called the States-General, and matters which concerned all the Netherlands came before the States-General for debate, but before a decision could be reached the delegates must needs go to their home councils to approve it. If one council of the seventeen failed to concur the measure was lost. You will agree that this was legislating under difficulties. But when I tell you that within each of the states there were cities, baronies and countships which must also be consulted before a proposal could become effectual, making a total of sixty-three bodies which had to vote unanimously before a measure could be legalized, you will say that I have read history when drunk. But I must tax your credulity yet again, for after a measure had run the gamut of all the objectors and had been passed then the cost, if it were a money bill, became a matter of negotiation between the states. Who was to pay and how much, was the constant question. How is that question to be met by the fruit unions with-



Three-year-old orchard in the Spokane Valley, Washington

out a central authority endowed with the taxing power?

Let us see how this nation of individualists succeeded in working under this chaotic system. It happened in 1555—I think it was; my memory for dates is atrocious—that Emperor Charles V, having inherited the Netherlands with most of the rest of the world, decided to withdraw into a cloister and give over to his son the power. Now this son, Philip the Second of Spain, had peculiar ideas on a number of subjects, and among others was a pronounced religious feeling. He resented a tendency toward new forms of worship which he found growing in the Netherlands. He conceived it to be his duty to stamp out these heresies and invented quite a number of new ways of punishing the guilty. The time came, in the cities of the lowlands, when a gentleman taking his morning walk might happen upon his son or daughter hanging by one foot and minus the eyes. Such things were annoying. The old archives say that in a few years upward of a hundred thousand men, women and children were thus done to death and their properties confiscated. Time after time the States-General met and debated. Debated while the fires burned in the city squares. There was no union, not one of the states which was not at the minute alight with the death fires would agree to give up anything of their petty privileges for the good of all. Each of them would agree to anything when in trouble, but to nothing when trouble, for the time, had passed them by. In vain, or almost in vain, William of Nassau urged them to union. For a time they would heed and, uniting, hurl the Spaniard back. But Philip, knowing their disunion, would offer special privileges to a state

here and a city there and disunion, with its weakness, would come upon them again. In moments of success each state would pay as little as possible for fear that it might be paying more than its neighbor. In short, it was as pretty an illustration of what will happen to the fruit unions on the Coast as one could wish—unless they create a strong central authority. In the course of time the Netherlands were disrupted and are disrupted still. Part of them, the eight states known to history as the Dutch Netherlands, continued the fight under William of Nassau and were destined to become the greatest nation of the time, and they did it in spite of their loose union. In confessing it I am giving an apparently strong argument to those contenders for the loose union of the fruit interests of the Coast. William the Silent died in his blood, murdered by that genial ghoul, the king of Spain. The war was continued by the Dutch for yet another thirty years—sixty years in all. Now enters John of Barneveld. The fruitgrowers of the Coast will find they have in their ranks many Johns of Barneveld. He was the chief man of the dominant state of Holland and had acquired great fame in its service. Maurice of Nassau and other patriots were constantly urging a strong unionized government. Barneveld said, in public, that he opposed Nassau because Nassau wanted to be king. Barneveld gained great popularity for his strong republican attitude, and even modern historians have been confused. But Barneveld knew that Nassau did not want to be king; his letters in the Archives d'Orange show it clearly. What Barneveld wanted was to prevent a strong central union, for the very powers which Holland would have

been compelled to grant to the central council were the powers held by Barneveld in Holland. To prevent the loss of those powers he went a long way, even to a traitorous act against his country. Your Johns of Barneveld will go a long way to retain their little influence; the managers of the Oshkosh Union, the Umatilla Union or the what-not union will not like to see themselves shorn of power that it may be given to a central council.

The Dutch Netherlands were a great nation—the greatest in the world. They came to the point that they could not see why they should have their powers centralized. Their wealth was unbounded, their ships covered the seas, their colonies encircled the globe. The war with Spain concluded, why keep up the war fleet? “If the Coast cities and the merchants want to keep up the fleet let them pay for it; we won’t,” said the states of the interior. It was the beginning of the end. The navy, in the greater part, was dismissed from service and what remained was not kept in repair. The army was neglected. The inter-state jealousies brought about a condition whereby the individual states negotiated with the commission houses—I beg your pardon—I mean the competing nations. By so doing international obligations were dishonorably left unfulfilled. The long time allies of the Netherlands, France and England became enemies from this cause. England was the most successful produce commission dealer of the period. (Let the phrase stand.) She had a centralized authority which made her strength and intelligence instantly and completely available for war and diplomacy. Her government loved the fishing in troubled waters, and because her business was in the

hands of experts she could make, and did, the troubled water that she might the more profitably fish. She made enemies for the Netherlands on every hand and fomented disturbances at home. Her council knew what it wanted always and never lost sight of the main purpose. Bit by bit she took away the trade of the Netherlands and bit by bit, whether by force or chicanery, absorbed the Dutch colonies. There is but one reason to explain why she was able to thus accomplish. The Dutch were richer, had a better navy, a greater and more effective army, but they had no centralized authority by which to give their strength direction. England had.

It was my purpose, when beginning this sketch, to use the Hanseatic League as an illustration of the results of an insufficiency of power given to the central council. But my readers have had illustrations enough. It remains for me now to trace the course which political government—or the idea of political government followed in giving birth to the modern corporation. Many of us have the idea that our modern corporation sprang like—who was it, I’ve forgotten, who sprang full armored into the world. Nothing could be more remote from the truth. Motley, in one of his great books, stated that commercial corporations reflect the forms of government of the nation which chartered them. He was at least in part right, though commercial corporations, as we know them in this day, have exceeded in efficiency of organization the governments from whose constitutions theirs took form. To put it in another way, our modern business corporations are perfected imitations, in both constitutions and executive equipment, of political governments. A

glance at the constitution of the Dutch East India Company makes it clear that it was a child of no uncertain parentage. None but the chaotic government of the Netherlands could have fathered it. It was controlled and financed by eight cities, and each of them appointed a board of control; each board with the veto power. An inner board of seventeen was created to act for all, but they were given power to act only with the unanimity of the eight local boards. The council of seventeen became, of course, a very fine debating club. However, the company was for many years enormously successful—paid dividends as high as a hundred per cent per annum. It wasn’t very hard for everybody to agree upon method, when the dividends were rolling in with unexpected flood, any more than it will be difficult to get the fruit co-operators to agree at a time of high tide of success. But the day of competition came. When it came the company possessed the entire monopoly of trade with India, with Australasia. It had colonies in Brazil and in New Amsterdam, or rather in the New Netherlands, with New Amsterdam as the capital—the same village which is now named New York. The company maintained armies and war fleets greater than many nations. Its own governors and judges governed and adjudicated in North America, in Brazil, in Java and the Southern Isles, in India, in South Africa. It was some company, believe me. Standard Oil is a cigar stand compared with it.

Now as to the British East India Company. This was also a child of true, honest parents. Its very complexion was that of the power which chartered it. Its very title indicated its centralized constitution, thus: “The Governor and Company of Merchants of London Trading Into the East Indies.” That was it, the “governor” and company. When the company wanted a governor it did not choose the man who could make the prettiest popular address—if your co-operators have a loose union that is exactly what history says they will do—but they went into the market where brains are offered for sale and picked a man who had proven himself to have the greatest executive ability and hired him, saying, “Here is the necessary capital and there is the business. Go after it. All we want is dividends.” They left to the governor the employing of the executives under him; he engaged the generals who conducted the company’s wars and the admirals who managed the company’s fleets. You can readily imagine from the picture I have given of the Dutch company that soldiers and fleets were necessary. Indeed, it competed for business with swords and cannon as very necessary tools. Secret diplomacy was also very necessary, as it will be to the fruit growers of the West.



Harvesting strawberries in the Spokane Valley, Washington

In important matters the governor acted first and reported afterwards. Especially in times of difficulty he had the power to act and acted quickly. The Dutch company, on the other hand, held general debates in a crisis, and usually acted not at all.

The two companies fought each other up and down the world. You see the result on a world map. South Africa is British, as is India; the Dutch names appear no more in North America. Brazil went to Portugal on a diplomatic slip-up, and the former Dutch Isles, barring Java, are red on the map. Why? The Dutch company was infinitely better financed, and prior to its time the Netherlands peoples held all the trade and England held none. Every natural condition favored the Dutch. Yet the Dutch company went down in ruin and the English company grew so amazingly great that the English government itself feared it and pulled it down, taking the power to



Auto owners vie with each other in decorations

itself. I hope the fruit movement on the Coast will grow so strong as to threaten the integrity of the federal government. It is probably not possible with a centralized control, but it is certainly impossible without it. Did I hear my critic say, "This man tells us we may not do this and must do that, but he doesn't tell us how to do?" Such is not my duty.

Rural Play Congress Held at Cleveland

RURAL recreation will be the main theme of the sixth annual meeting of the Playground and Recreation Association of America, which is to be held in Cleveland, Ohio, June 5 to 8, 1912. The last big play congress was held in Rochester, New York. The interest in it was shown by the fact that about 20,000 programs were called for. Some of the evening meetings were attended by five thousand people. The addresses delivered at the annual meetings are printed and find their way not only to the different parts of our own country, but also to many foreign countries. During the last year the association has had many requests for advice from rural communities which are trying to solve their recreation problem. At the rural play congress successful recreation center work, conducted by rural schools, rural churches, the Grange and by other organizations will be described, and the lines of further progress indicated by those who have had the most experience in dealing with the problems in rural life. The association has organized a committee on rural recreation with Professor Liberty H. Bailey of Cornell University as chairman; Kenyon L. Butterfield, Charles Garfield, George J. Fisher and Myron T. Scudder are also members of this committee. You can greatly aid the association by sending to its secretary, Mr. Howard S. Braucher, 1 Madison Avenue, New York, first, any information regarding any experiment in providing rural recreation; second, by sending any suggestions regarding plans which you feel ought to be tried;

third, by suggesting any problems which you feel need to be discussed.

This is very important in many respects, and it is intended for the betterment of the country in general, particularly the rural districts. The broad field which the session will cover is illustrated by the following topics, on

which papers will be read, followed by discussions: "The Need of Rural Recreation," "Why Boys Leave the Country," "The Country Boy—Does He Have Sufficient Play Time?" "The Girl of Eighteen in the Country," "Rural Recreation Through the Church," "Rural Recreation Through the Country School House," "The Opportunity of the Village High School," "Rural Recreation Through the Grange," "The Women's Club—Recreation of the Farmer's Wife," "The Rural Traveling Library," "Contests in Gardening," "Corn Clubs," "Summer Baseball," "Boy Scout Activities for Country Boys," "Music as a Form of Play in Rural Districts," "Dramatic Play in Rural Districts," "Story Telling in the Rural Districts of Ireland," "County Parks," "The Rural Play Festival," "At the County Fair," "Rural Pageants," "The Lessening of Sickness in Rural Districts Through More Adequate Provision for Recreation," "Ways in Which Recreation May Increase Economic Efficiency in Rural Districts," "Higher Standards of Citizenship Made Possible by Rural Recreation Centers," "Should Provision for Rural Recreation Be Made Through Public Taxation?" "A Proposed Recreation Bill for Rural Districts," "The Task of a Rural Recreation Secretary." The idea and program must necessarily in itself suggest the advisability of this sort of work being taken up in many sections of the country.

Editor Better Fruit:

Compliments are not a habit with me, but they are coming to you for your last six numbers. Is there any way to purchase same bound? Why don't you charge more money and put on a heavier cover? Twenty-five cents is cheap enough for your grade of data. My customers are all great readers of your paper. Yours truly, W. L. Cunningham, Cincinnati, Ohio.



HARVEY HERRICK IN CASE CAR ARRIVING AT ALHAMBRA, CAL. ON OCEAN TO OCEAN PATHFINDING TOUR

ACROSS THE CONTINENT

The above illustrates Mr. Harvey Herrick, who started from Los Angeles April 27 in a Case automobile to make a trip across the continent from ocean to ocean. The road has been compiled by various automobile clubs and tourists who have made the trip. Mr. Herrick in his Case car will pass through many towns in the following states: California, Arizona, New Mexico, Colorado, Kansas, Missouri, Illinois, Indiana, Ohio, Pennsylvania, Virginia, Maryland and New York. The Ocean-to-Ocean Highway Association, of which Mr. J. S. Cornwall is president, as a result of the trip will obtain information from the county official engineers and surveyors along the roads of the various counties in each state through which the trip is to be conducted, for the purpose of mapping out a particularly easy and quick road across the continent for automobile tourists.

Insect and Fungus Enemies of Fruit and Foliage of Apple

By A. L. Quaintance and W. M. Scott, United States Department of Agriculture

THE spraying of apple orchards has received a great impetus during the past few years by reason of the increased demand for good fruit and the satisfactory prices received therefor. While most of the commercial orchardists have been spraying for a good many years the practice has not been as general among small orchardists as is desirable, and the present profitableness of apple culture has been the principal factor in awakening an interest in a crop heretofore much neglected by them. A few years ago it was felt that orchard spraying was on a rather definite basis, but recent improvements in spray materials and apparatus for their application have contributed to raise many questions of detail in the minds of fruitgrowers. These questions have to do with the best spray to use, times of making applications, grade of chemicals to purchase, the desirability of preparing sprays at home in preference to use of commercial preparations. It is the aim of this article to furnish the orchardist necessary information for summer spraying, or spraying trees in foliage, as opposed to treatments during the dormant period of trees, as for the San Jose scale, blister mite, etc. The principal insects and diseases affecting the fruit and foliage of the apple are first considered, and with the illustrations should be easy of recognition. This is followed by a consideration of the sprays recommended and directions for their preparation and use. Owing to the extended area in the United States over which the apple is cultivated, it is necessary to refer to certain insects and diseases which are of interest in more or less restricted localities and to indicate the appropriate treatment for the same in the sprays schedule. It is believed, however, that the orchardists in the New England States as well as the orchardists in the Ozark regions of Arkansas and Missouri will have no difficulty in determining the particular applications necessary under their respective conditions.

The larva of the codling moth, sometimes called the apple worm, is well known alike to growers and consumers of apples. It is the principal cause of wormy apples and its control must be secured in profitable apple growing; otherwise from one-half to three-fourths, or even a larger proportion, of the crop will be wormy and unfit for market. No orchard insect perhaps is more successfully controlled than this one, and by careful spraying the fruitgrower may expect to protect from its injuries from 90 to 95 per cent of the crop. Owing to the great extent of the apple growing industry there is, however, in the aggregate a large shrinkage in the quantity of marketable fruit resulting from injuries by the codling moth. This shrinkage in the United States each year represents a

loss of about \$12,000,000, and some \$3,000,000 or \$4,000,000 are annually spent for sprays and labor in its control. Wormy apples are shown in Figure 1. The presence in apples of the apple worm early in the season is usually indicated by the occurrence at the calyx end of more or less frass. Fruit injured early in the season and while it is small mostly falls to the ground. Larvae of the second and later broods occur when the fruit is more nearly grown, and it is the injuries of these broods that are observed in fruit on the market. The severity of attacks varies somewhat from season to season, and especially in different parts of the country, depending upon the number of broods of larvae produced in the region in question.

The number of broods of larvae of the codling moth for the country as a whole varies from practically one to three. Throughout the New England States and southward, at least to about the latitude of Washington, there is one full brood of larvae each year and a partial second. In the northernmost part of the territory indicated, as in Maine and New York, the second brood of larvae will be slight, varying in extent from season to season, while in the southern portion of this territory it is normally quite large, and during certain years there are practically two full broods. In the more southern states, as the Carolinas on the east and Arkansas on the west, there are probably three broods of larvae each year. This has been determined to be true for Arkansas and Kansas. In New Mexico it is thought that the insect is three-brooded also. It has been determined that there are two full broods of larvae in states of the far West, Washington, Oregon, Idaho, Utah and Colorado. The effect of such seasonal conditions as drought and temperature on the number of first-brood larvae transforming for a given locality is quite marked. Thus in Erie, Pennsylvania, in 1907,

with an abnormally late spring, only three per cent of the first-brood larvae transformed, as compared with sixty-eight per cent which transformed the following year and twenty-three per cent the next year.

How the Insect Passes the Winter.—Upon leaving the fruit in late summer or fall larvae seek protected places upon the trees, such as holes, cracks, crotches of limbs or under bark scales, or even underneath trash on the ground, construct tough silken cocoons, and here pass the winter in the larval condition. Large numbers of larvae are carried to storage houses in apples in the fall, where later they spin cocoons in the boxes, bins or barrels, or in cracks in the floor or sides of the house. In the orchard large numbers of larvae are destroyed during the winter by birds, principally woodpeckers, but in storage houses a large proportion doubtless survive, the moths from which fly to the orchards in the spring and constitute an important source of infestation. With the coming of spring the larvae enter the pupal stage, and about the period of blooming of the apple, or somewhat later, the moths begin to appear, continuing to emerge for three or four weeks, while belated moths may not emerge until considerably later.

The adult moth or miller (Figure 2, a) is rather variable in size, but the maximum wing expanse rarely exceeds three-fourths of an inch. The forewings above are of brownish gray color, with numerous cross lines of gray. Near the tip of each wing is a conspicuous brown spot, or ocellus, in which are two irregular broken lines of a metallic coppery or golden color. The hind wings above are grayish brown, becoming darker toward the margin, which bears a delicate fringe, at the base of which is a narrow dark line. When at rest on the grayish bark of an apple tree, the moth in color so harmonizes with its surroundings that

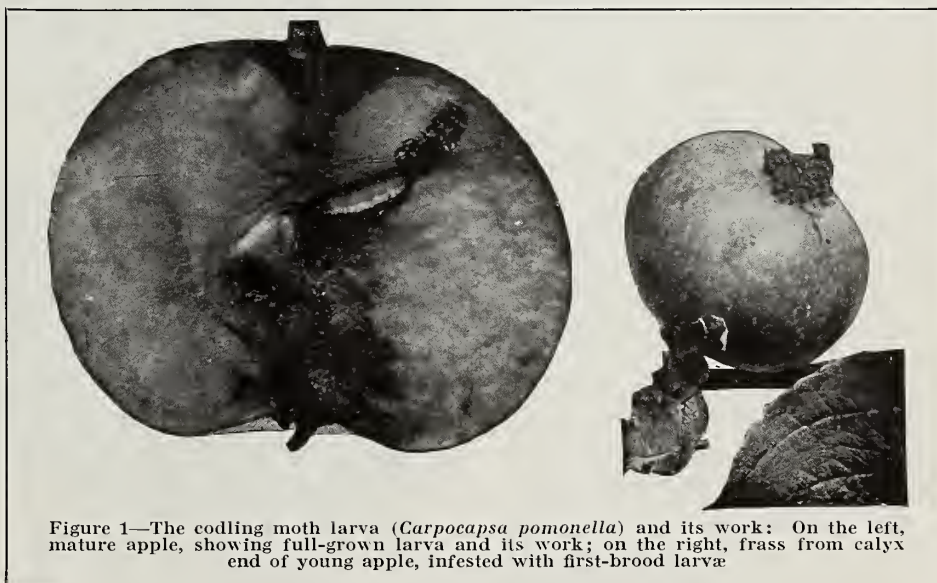


Figure 1—The codling moth larva (*Carpocapsa pomonella*) and its work: On the left, mature apple, showing full-grown larva and its work; on the right, frass from calyx end of young apple, infested with first-brood larvae

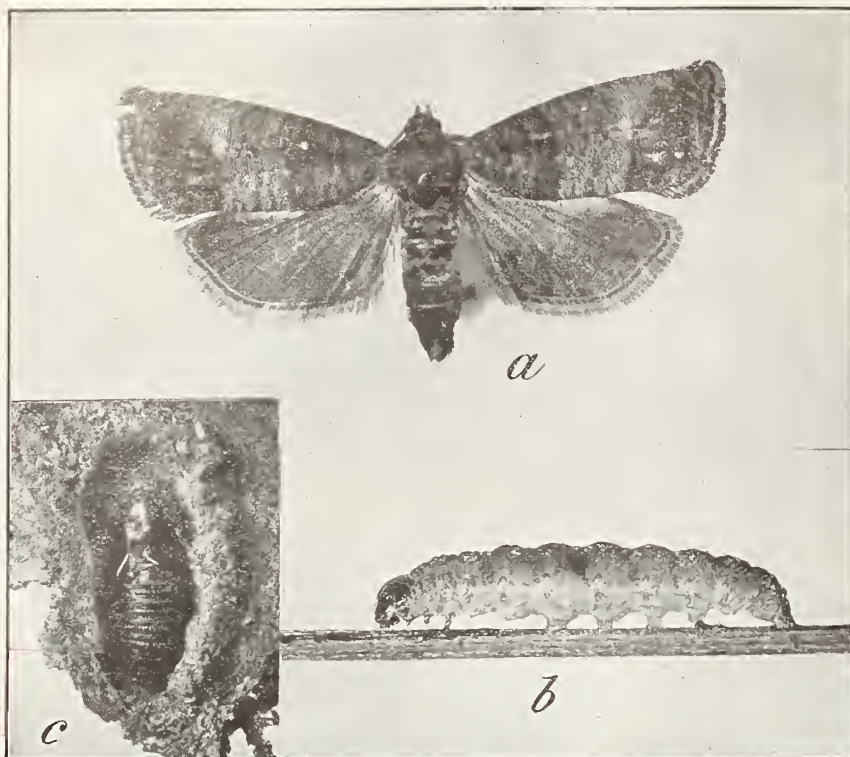


Figure 2—Stages of the codling moth: *a*, Moth; *b*, larva; *c*, pupa in its cocoon (Much enlarged)

it is not readily distinguished, and the insect in this stage is perhaps little known to orchardists.

The eggs are small, flat, somewhat oval in shape, and of about the size of a pinhead. When recently deposited they are of a pearl-white color, but become darker with the development of the embryo, which after a few days is easily distinguished as a reddish ring within the eggs. Under a lens the surface is seen to be covered with a network of ridges, coarser toward the edge. The eggs of the first generation of moths are deposited mainly on the leaves and twigs, comparatively few being placed on the apple, possibly on account of the fine hairs with which this fruit is covered when small. More of the eggs of the second generation, however, are placed on the fruit, which by this time is much larger and presents a comparatively smooth surface. The average time required for the egg to hatch is about eleven days, the time varying considerably, however, with the temperature.

It is in the larval or "worm" stage that injury is done to the apple. The larva as it hatches from the egg is very small, from one-twentieth to one-sixteenth of an inch in length, but it soon begins to search for the fruit. If hatched from eggs placed here and there on the foliage, the larvae chew more or less into the leaf or other portions of the plant in their wandering around and may thus be poisoned, if poison be present on the plants. If the eggs have been deposited on the fruit itself the larvae are much more likely to gain entrance to the fruit. Larvae entering the fruit by the calyx end feed within the calyx cavity for a few days

before penetrating the fruit. Hence the advantage of thoroughly spraying trees shortly after the petals have fallen and while the calyx lobes are still spread, in order to place in each calyx cavity a small particle of poison to be eaten later by the larva as it seeks to enter the fruit. After entering the apple the larva feeds and grows rapidly, and in the course of about twenty days has become full grown. (See Figure 2, *b*.) At this time the "worms" are about three-fourths of an inch long, and the majority of them are pinkish or flesh

colored on the upper surface and whitish below. The full-grown larva, upon leaving the fruit and finding a protected place, constructs a whitish silken cocoon within which, in the course of a few days it may change to pupa, or it may remain in the larval condition until the following spring, as already explained. The pupa (Figure 2, *c*) is about one-half inch long, at first yellowish or brownish, but later becoming quite dark brown and shortly before emergence of the moth assuming a distinct bronze color. The pupal stage varies much in length, but on the average about twenty days elapse from the spinning of the cocoon until the emergence of the moth. After emergence the moths, in the course of a few days, begin egg laying, the entire life cycle, from egg to egg, requiring, on the average, some fifty days.

The treatment for the codling moth is limited almost entirely to spraying the trees with arsenicals, such as paris green or arsenate of lead; the latter is now principally used. In the East the poison is usually combined with a fungicide. In some sections banding of trees is also employed, and under special conditions is a valuable adjunct to spraying. From two to five spray applications are given, according to the section of country. Of all treatments the first is much the most important; this is given as soon as the blossoms have fallen and has for its object the placing of poison in the calyx cup of each little apple. This treatment may be successfully given during the eight or ten days between the dropping of the petals and the closing of the calyx lobes. After the calyx lobes have drawn together it is difficult to force the poison into the calyx cup. (See Figure 3.) Very thorough work is necessary at this time, and carelessness in making the first application cannot be counteracted by subsequent treatments. Good results, in fact, have been



Figure 3—Apple clusters, showing, on the left, young fruit with calyx lobes spread, and in right condition for spraying; on the right, apples with calyx lobes closed, and too late for satisfactory spraying



Figure 4—Egg scars of the plum curculio (*Conotrachelus nenuphar*) on young apples

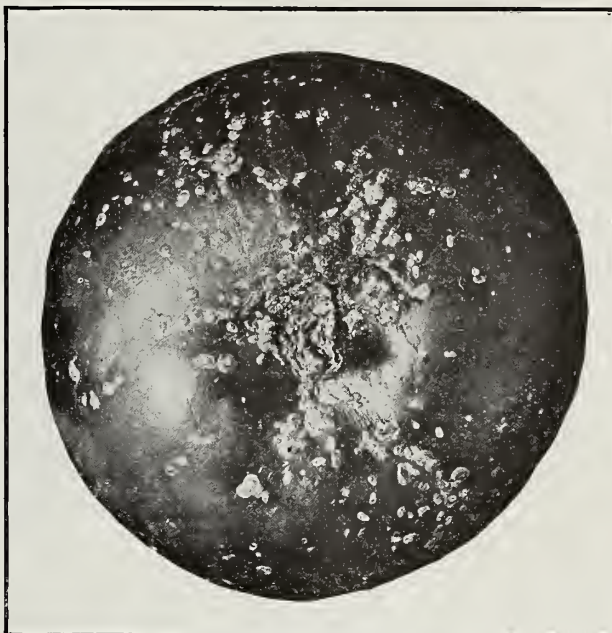


Figure 12—Baldwin apple badly infested with San Jose scale (*Aspidiotus perniciosus*)

obtained where this application alone has been given, and in portions of the West, where it is unnecessary to spray for fungous diseases, a single treatment is held by some to be sufficient. While excellent results have been obtained in the East from this so-called "one-spray" method, yet the necessity of using fungicides in this territory renders the use of arsenicals in addition comparatively inexpensive. The second application for the codling moth is given from three to four weeks after the blossoms have fallen and has for its purpose the destruction of the young larvae as they are hatching from the eggs spread promiscuously over the foliage and fruit. Eight or nine weeks following the dropping of the petals the third treatment is given, at which time the second-brood larvae are hatching in numbers. These treatments, if properly applied, should be sufficient to control the insect effectively in any region, but in a territory where bitter rot and apple blotch are prevalent, and where later fungicidal treatments are necessary, it will be advisable to add an arsenical for further insurance against the codling moth, as stated in the spraying schedule.

The plum curculio, over a great deal of its range, is easily second in importance as an apple pest to the codling moth. It occurs quite generally from Canada south to Florida and west to about the one-hundredth meridian. The insect is a small snout beetle, of the family Curculionidae, and many of its near relatives, as the cotton-boll weevil, strawberry weevil, plum gouger, alfalfa weevil, etc., are very serious enemies of cultivated crops. The species attacks most cultivated pome and stone fruits, as apple, pear, peach, plum, cherry, etc., and it is especially troublesome to the peach. In the present connection the insect is considered in reference to its injuries to apples. The over-wintering beetles attack the young

apples in the spring, shortly after these are well set. Both sexes puncture the fruit with their snout-like proboscis for feeding, and the females also in egg laying. Feeding and egg laying continue for several weeks or months in the case of the hardier individuals. Much of the fruit, punctured while small, falls to the ground, but after it has become about the size of a large marble or larger (see Figure 4) it may remain on the trees. The effect of the punctures when abundant, however, is to cause the fruit to become knotty and misshapen as it grows, the extent of the deformity varying with the severity of the injury and also with the variety. Rapidly growing summer or fall varieties of apples show the injury perhaps worst, while in the case of slower growing winter apples the injury is more likely to be outgrown, the egg punctures showing in the fall as more or less nail-shaped scars, not affecting the quality of the fruit, though detracting from its appearance. (See Figure 5, showing deformed Duchess apples.) When beetles of the new generation appear in late summer and fall they feed upon the fruits, producing injuries

shown in Figure 6. With the snout a hole is excavated in the apple, and the flesh is eaten out under the skin surrounding the puncture as far as this organ will reach. This "fall" feeding puncture is often very much in evidence in orchards where the insect is abundant, and the injury is at times considerable. Decay of the fruit often starts at the injured place, spreading from and enlarging the cavity, as shown in the figure, and soon rendering the fruit worthless, except for immediate use. Fruit thus punctured in the fall will not as a rule keep well in storage and should not, of course, be included in the best grades. Although the curculio larva is able to develop on the trees in peaches, plums and cherries, it does not appear to be able to do so in apples and pears. The larvae, however, develop perfectly in apples which fall to the ground, and orchards are thus kept well stocked with the insect.

The adult beetles are out and ovipositing on plums and other early fruit before apples as a rule are of sufficient size to be used. As soon as the apple is grown to the size of a small marble, however, it is attacked by the curculio for egg laying purposes, and most of the eggs are deposited during the first six or eight weeks after egg laying begins. A large number of records of the number of eggs deposited by the curculio in plums, peaches, apples, etc., has been obtained in different localities, as well as other data on the life and habits of the insect. It has been found that the greatest number of eggs deposited by any one female was 557 and the minimum 1, with an average of 144.85 eggs per beetle for all the individuals under observation. While there is much variation in the number of eggs deposited within a given time in the several localities there is a general agreement in that the great majority of the eggs are placed by the end of eight

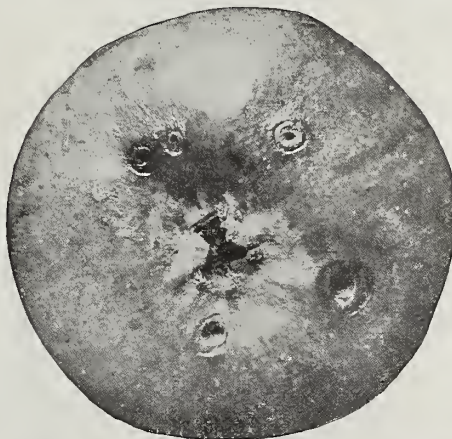


Figure 6—Fall feeding punctures of the plum curculio in ripe apple

weeks; approximately one-fourth of the total eggs are deposited during the first two weeks, one-half have been deposited by the close of the first month, three-fourths within six weeks and about 88 per cent of the total within eight weeks after oviposition began. The value of these data will appear when it is remembered that the injury to the apple results from the egg and feeding punctures, which it is desired to prevent. To accomplish this best sprays must be applied with timeliness and be in effect over a considerable period.

Many observations have been made in different localities, which show the time spent in the fruit by the curculio larva, and also the time spent in the ground, before and during pupation, until the emergence of the beetle. Thus the average time spent in the fruit (egg and larval stages combined), for the several localities investigated, proved to be 19.48 days, and the average time spent in the ground (as larva, pupa and adult) was found to be 30.89 days, giving an average life-cycle period for the insect of 50.27 days. Complete observations of the life cycle have also been made on a total of 597 individuals from many parts of the country, which give a final average per individual of 50.71 days, differing only a fraction of a day from the time determined in an essentially different manner. Approximately fifty days would, therefore, appear to be the average life-cycle period for the plum curculio for the country as a whole. The variation for different individuals will be considerable, and as actually determined in the case of individual records was from 37 to 58.45 days. For practical purposes there is only one generation of the



Figure 5—Duchess apples at picking time, showing deformed condition from egg and feeding punctures of the plum curculio

beetles each year. The adults, developing from fruit during the summer, spend the remainder of the time, until hibernation begins, feeding upon the foliage and fruit. With the approach of cold weather the beetles seek shelter, apparently wherever they may be, under trash in orchards, along fences and in similar places. They are always abundant in the woods adjacent to orchards.

During the past few years much experimental work has been done in the use of arsenical sprays in the control of the curculio on apple, notably by Professor Stedman in Missouri and Professor Crandall in Illinois. Professor Crandall's investigations have extended over two years. In regard to the value of the work he states as fol-

lows: "To sum up the matter of spraying for the curculio from the standpoint of results obtained during the two seasons of 1903 and 1904, it seems possible, under favorable conditions and with a reasonable number of applications, to control curculios to the extent of from 20 to 40 per cent of the possible injury. There is benefit to be derived from spraying, but not that degree of benefit which would warrant commendation of spraying as the one great panacea of injury done by the curculio." Many experiments by the Bureau of Entomology emphasize in general the soundness of the conclusions of Professor Crandall. The results of spraying for the curculio on apple as carried out by the Bureau of Entomology in different parts of the country are given in Table I.

It will be noted that the results of spraying vary widely. (See Table I.) It is apparent that account must be taken of other conditions, such as the relative abundance of the insects as compared with the amount of fruit present on the trees. With a small fruit crop and an abundance of curculios the most thorough spraying will not serve to bring through a satisfactory amount of sound fruit, as will be noted in the results of experiments at St. Joseph, Missouri. With a large crop of fruit note the results at Mount Jackson, Virginia. If the curculios for any cause are scarce and there is a large fruit crop injury is, of course, much less important. In other words, the degree of success in spraying varies with the abundance of the insects. While spraying is undoubtedly a most important adjunct, and if persisted in from year to year may answer reasonably for its control, yet it is clear that where the insect is abundant other measures should also be employed. In all cases which have come under our observations the insects have always been found most abundant in orchards which are in sod or are poorly cared for and allowed to grow up more or less in weeds and trash. Orchards adjacent to woods will also usually

TABLE I—RESULTS OF SPRAYING APPLES FOR PLUM CURCULIO—VARIOUS LOCALITIES

Locality	Treatment	Number of sound apples	Number of apples punctured	Total number apples	Average percentage of sound apples	Number of applications
Anderson, Mo., 1908.	Bordeaux mixture (4-4-50) plus ¼ lb. paris green.	1,710	1,867	3,577	47.81	7
Do.....	Bordeaux mixture (4-4-50) plus 2 lbs. arsenate of lead.	3,844	2,846	6,690	57.45	7
Do.....	Untreated	193	3,312	3,505	5.51	None
Westfield, N. Y., 1908	Bordeaux mixture (4-4-50) plus 2 lbs. arsenate of lead.	10,506	921	11,427	91.07	1
Do.....	Untreated	300	761	1,061	25.44	None
North East, Pa., 1906	Bordeaux mixture (4-4-50) plus 2 lbs. arsenate of lead.	1,354	359	1,713	79.04	2
Do.....	Untreated	270	791	1,061	25.44	None
Siloam Springs, Ark., 1909.	Bordeaux mixture (4-4-50) plus 1 lb. arsenate of lead. Trees drenched.	37,304	5,899	43,203	86.34	1
Do.....	Bordeaux mixture (3-3-50) plus 2 lbs. arsenate of lead.	26,897	5,554	32,451	82.88	5
Do.....	Untreated	2,234	22,212	24,446	9.14	None
Crozet, Va., 1909.....	Bordeaux mixture (2-2-50) plus 2 lbs. arsenate of lead. Trees drenched.	15,406	5,432	20,838	73.93	1
Do.....	Bordeaux mixture (2-2-50) plus 2 lbs. arsenate of lead.	12,231	1,846	14,077	86.89	4
Do.....	Untreated	10,322	8,785	19,107	None
Mount Jackson, Va., 1909.	Bordeaux mixture (2-2-50) plus 2 lbs. arsenate of lead. Trees drenched.	11,335	8,240	19,575	57.90	1
Do.....	Bordeaux mixture (1-1-50) plus 2 lbs. arsenate of lead.	6,651	9,642	16,293	40.82	3
Do.....	Untreated	6,984	18,657	25,641	27.23	None
St. Joseph, Mo., 1909.	Arsenate of lead, 2 lbs. to 50 gallons water. Trees drenched.	2,130	3,658	5,788	36.80	1
Do.....	Bordeaux mixture (4-4-50) plus 2 lbs. arsenate of lead.	2,480	2,470	4,950	50.10	4
Do.....	Untreated	182	4,307	4,489	4.05	None

suffer severely, especially along the border. As opposed to this condition is the notably less injury in orchards kept free from weeds and trash. In such cases the sprayings usually given for other orchard insects, as the codling moth, serve to keep the curculio well under control. In fact it may be said as a general statement that this insect will never become seriously troublesome in apple orchards given the usual routine attention in cultivation, spraying, pruning, etc., now considered essential in successful fruit growing.

The larva of the lesser apple worm and its work have been quite generally confused with those of the codling moth. The caterpillar, when full grown, is about one-half the size of the full-grown codling moth larva, and is fusiform in shape and usually pink or flesh colored. A codling-moth larva of this size is rarely, if ever, pinkish in color, but dirty white and marked with black dots. The injuries of the two species are in a way quite similar. The first-brood larvae of the lesser apple worm enter the fruit mostly at the calyx end. Cavities or holes from one-fourth to one-half inch deep are eaten into the flesh, more or less around the calyx lobes and core within. The larvae, boring directly through the skin at the base of the calyx lobes, or, more commonly, entering the calyx cavity, excavate mines or short burrows down into the flesh. Frequently the larvae also burrow out in the calyx basin just under the skin, producing winding or blotch mines (see Figure 7). Such mines occur on the sides of the apple, especially where two fruits are in contact. Young fruit thus injured usually falls or ripens prematurely. Later in the season the calyx-end injury is about as described, though the surface injury is more common, the larvae eating out the flesh under the skin in large, irregular, more or less linear patches, which are quite conspicuous. Larvae of this species apparently do not reach full development as early in the fall as those of the codling moth, and may find their way to barrels with the fruit, where they continue to feed, often doing considerable damage. Figure 8 illustrates apples thus injured, as

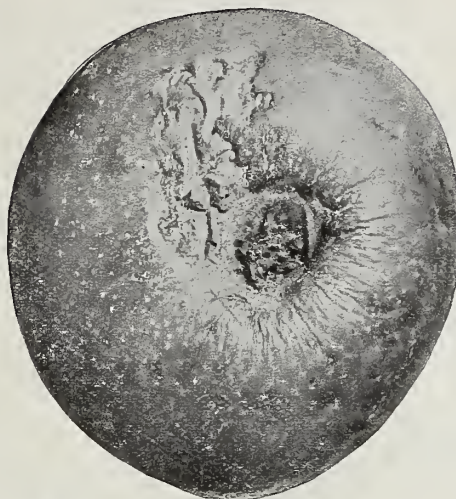


Figure 7—Injury by the lesser apple worm (*Enarmonia prunivora*) in calyx basin and end of a ripe apple

found in barrels on the Washington market. The lesser apple worm is probably a native insect and it infests other fruits, wild and cultivated. It is recorded from apples, haws, plums, prunes, cherries, peaches and species of *Crataegus*. It has also been reared from the black-knot of plum and from galls on oak and elm. Its life history and habits probably closely parallel those of the codling moth. It is known to be quite generally present in orchards from Canada south to Georgia and west to the Rocky Mountains. It has been found abundantly in apples in the Puget Sound district in Washington, and is known also from British Columbia. The schedule of treatments recommended for the codling moth will be effective in the control of this species.

Two species of cankerworms in the United States are often destructive pests in apple orchards, the larvae making their appearance shortly after the leaves have put forth. The caterpillars (Figure 9) are rather small, slender, naked creatures with the habit of looping as they crawl, for which reason insects of this habit are commonly designated as "span worms" or "measuring worms." The fall cankerworm occurs more commonly in the northern United States, as from Rhode

Island to Canada and westward to Lake Superior, and it is also common in California. The spring cankerworm is particularly abundant in the Mississippi Valley from Texas to Iowa, ranging eastward to Maine. It is common in the orchard section of Northern Virginia, Western Maryland and West Virginia. The two species thus overlap in their distribution and both may be concerned in the defoliation of an orchard, especially in the northeastern part of the United States. The fall cankerworm deposits its eggs in ring-like masses on the twigs during late fall or in warm periods during the winter. The spring cankerworm oviposits in early spring, before the buds start, in irregular masses under bark scales, along the trunk and limbs, or more or less promiscuously. The young larvae have hatched and are attacking the foliage by the time the young leaves are well free from the bud scales. They often occur in such enormous numbers that the trees are quickly defoliated, leaving only the midribs of the leaves (see Figure 10), the orchard from a distance appearing as if swept by fire. After the larvae mature they go to the ground and pupate just below the surface, and are easily destroyed by plowing and cultivations during the late spring and early mid-summer. There is only one generation of the insects each year, the adults of the fall species coming out in late fall and winter and those of the spring species in early spring, as stated. The adult females of both species are wingless and must crawl up the trunks of the trees to oviposit.

Three methods of control are applicable against cankerworms, and where the insects have been quite injurious the use of all three methods in conjunction may be adopted. The wingless moths, and also the caterpillars, may be prevented to a large extent from reaching the foliage by the use of bands of sticky substances around the trunks of trees, some twelve to eighteen inches from the ground. Some excellent preparations for this purpose are on the market, or home-made adhesives may be used. A simple plan is first to scrape off the rough bark from the trunk of the tree in a band eight to ten inches high and surround the tree at this place with a strip of stiff paper, tying tightly, so that no moth or larva can work up the trunk beneath it. The paper band should then be coated with a sticky adhesive, which should be replenished as often as necessary to keep it in good working condition. This method is especially suited to large trees in lawns around the home or elsewhere, where plowing and spraying are considered impracticable. The larvae are readily poisoned with arsenicals, as arsenate of lead and paris green, used at usual strengths. The first treatment for apple scab, while a little late for cankerworms, will in most cases answer fairly well, and where the insect is troublesome an arsenical should be added, as for the bud moth. Plowing orchards during late spring and early summer, with



Figure 8—Injury by lesser apple worms to apples after barreling

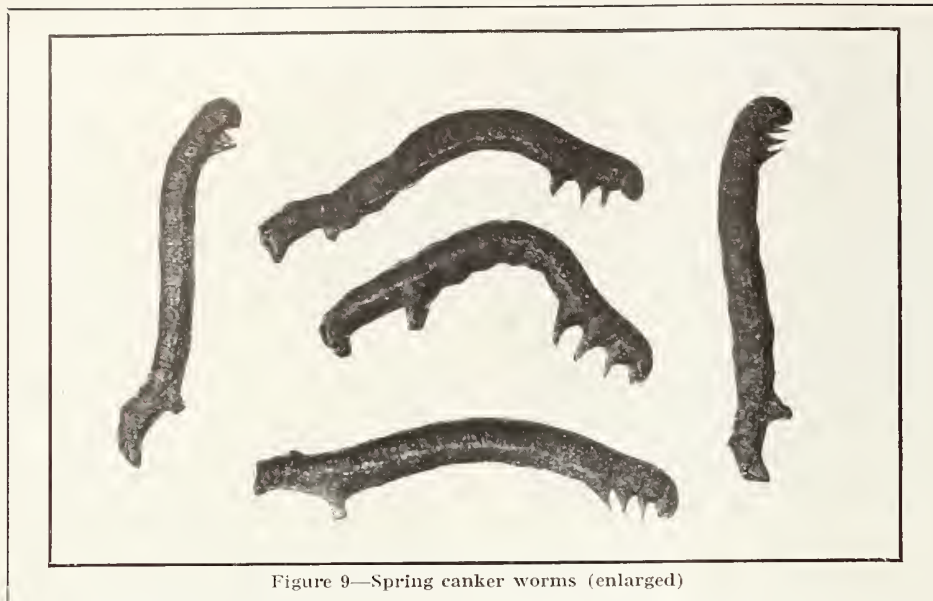


Figure 9—Spring canker worms (enlarged)

a few subsequent cultivations, will destroy most of the pupae in the soil. Care should be taken to stir the soil beneath the spread of the limbs of the trees, as in this soil most of the pupae are located. Except during very unusual conditions of abundance, orchards properly sprayed and cultivated will not be troubled by these insects. Cankerworms thrive in neglected old orchards in sod and may appear for several seasons in succession, and by devouring the leaves destroy the fruiting capacity of the trees.

The larva of the bud moth winters in a little hibernaculum or cocoon of silk covered with bits of dirt and bark attached to the limbs and twigs of trees. Early in the spring, as the buds of the apple are opening, the little dark-brown caterpillars, scarcely one-fourth of an inch long, leave their winter quarters and attack the tender developing leaves, often boring into the bud before the scales have spread apart. When abundant the larvae are thus able to do a large amount of injury. Severe damage may result to nursery stock or young trees following attack on the terminal buds of twigs or shoots. In some cases the twig itself is penetrated, the larva boring down into the pith some two or three inches. After their appearance in spring the larvae continue to feed, mostly at night, for some six or seven weeks, attacking principally the leaves and fruit buds. When full grown they pupate in a tubular fold of a leaf, well lined and securely fastened with silken threads; or two or three partly devoured leaves may be drawn together, and within these the cocoon is made. In New York state, and probably in the New England States, in which region this pest is frequently complained of, pupation takes place on dates varying from about June 1 to June 25. Moths begin to emerge as early as June 5 and emergence continues somewhat later than July 10. Eggs are deposited for the most part singly on the lower surface of leaves and hatch in from seven to ten days. The newly-hatched larvae construct a tube along the midrib or

larger vein of a leaf, from which they emerge to feed on the adjacent tissues, spinning as they go a web of silk for their protection. Feeding continues during July and August, and few are thus engaged in September, when, deserting foliage, hibernacula are constructed, as described, in which the half-grown larvae remain until the following spring, attacking the buds as stated. The principal injury results from the attack to the unfolding buds and to the twigs in the spring, although in neglected orchards considerable injury to foliage may result from the feeding of the young larvae during mid-summer. In more northern lati-

tudes the bud moth is single-brooded, though in the Central and more more Southern States it is thought that there may be two broods of larvae each year. The control of the bud moth rarely requires treatments other than those given in the course of spraying adopted by progressive orchardists. The first treatment for the apple scab coincides fairly well with the time when these larvae are actively feeding in the spring, and where their injury has been noted or is suspected an arsenical should be added to the fungicide used. The spray application after the falling of the blossoms, constituting the first treatment for the codling moth, is effective in further reducing the bud moth, and the two treatments should, under ordinary conditions, be sufficient to keep it well reduced.

The conspicuous, unsightly nests or tents of the apple tree tent caterpillar are not often seen in well cared for orchards, as this insect is kept well in check by the usual applications of arsenical sprays for the codling moth, curculio, etc. The nests, however, are often in evidence in neglected orchards and in trees along roadsides, and indicate a lack of interest on the part of the land owner in his orchard crops. The insect winters in the egg stage, the eggs being placed on twigs in a ring-like mass. The young larvae appear as the foliage is pushing out in the spring and at once start their nest in the crotch of some limb or branch, in which they retreat for protection when not feeding. As the caterpillars grow the nest increases in size until by the time the insects are full grown it is a

Figure 10—Work of the spring canker worm (*Paleacrita vernata*) on apple

Figure 14—Scab fungus on apple leaf

conspicuous, unsightly object. (See Figure 11.) As stated, orchards well sprayed for other fruit pests will rarely be seriously troubled by the tent caterpillar. Nevertheless the insect during certain seasons may become unusually abundant, and special treatments may be necessary for its control. The destruction of the nests themselves and the contained caterpillars is comparatively easy. Where the nests are low down on the tree it will be practical to destroy them by hand, or, if the nests are out of reach, they may be destroyed by means of some form of torch on a pole, the torch being made of asbestos or other absorbent material saturated with an inflammable oil, such as kerosene or crude petroleum.

In San Jose scale affection the use of dilute lime-sulphur sprays, as fungicides on trees in foliage, appears to have a distinctly retarding effect on the development. While all orchards infested with this insect should be given the usual dormant tree treatment, for one reason or another considerable numbers of the scale may escape destruction, especially on the terminal twigs, which are more difficult to coat thoroughly with the wash. The scales which thus escape are usually so few in number that no serious damage results during the season to the twigs and branches, but the young "lice" have a tendency to crawl out and settle on the fruit, thereby greatly disfiguring it. (See Figure 12.) The presence of these

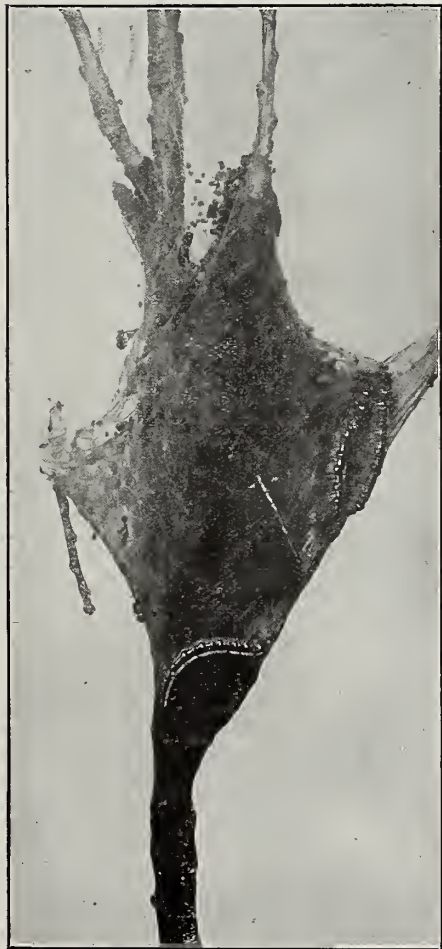


Figure 11—Nest and larvæ of the apple-tree tent caterpillar (*Malacosoma americana*)

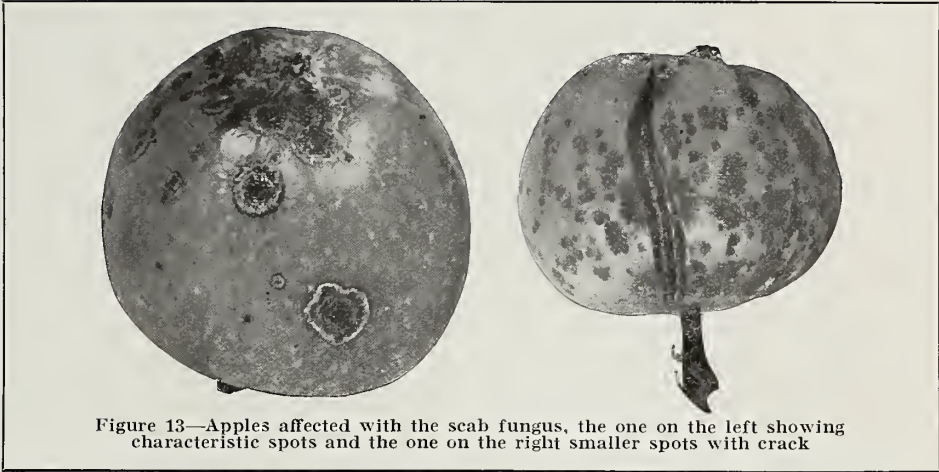


Figure 13—Apples affected with the scab fungus, the one on the left showing characteristic spots and the one on the right smaller spots with crack

TABLE II—RESULTS OF LIME-SULPHUR SPRAYS IN PREVENTING MARKING OF FRUIT BY THE SAN JOSE SCALE

Plat	Treatment *	Variety	Number apples infested	Number apples not infested	Total number apples	Percentage uninfested apples
No. 1.	Commercial lime-sulphur, 1½ to 50; sprayed May 12, 25, June 14, July 25	Rhode Island Greening.	137	1,606	1,743	92.13
No. 2.	Do	Baldwin.....	80	778	858	90.67
No. 3.	Home boiled lime-sulphur, May 12, 25, June 14, July 25.	Greening	79	3,939	4,018	98.03
No. 4.	Do	Baldwin.....	37	1,813	1,850	98.00
No. 5.	Commercial lime-sulphur, 1½ to 50; May 12, 25, June 14, July 25.	Baldwin.....	13	298	311	95.81
No. 6.	Bordeaux mixture (3-4-50), May 12, 25, June 14, July 25.	Greening	843	1,055	1,898	55.58
No. 7.	Do	Baldwin.....	525	500	1,025	48.78
No. 8.	Unsprayed	Greening	796	805	1,601	50.28
No. 9.	Do	Baldwin.....	809	190	999	19.01

* All treatments had two pounds of arsenate of lead to each 50 gallons of spray, except in case of plat 5, which had the poison in the application of May 12 only.

scales is very objectionable on apples intended for export trade, as scale-infested fruit is excluded from entry by certain foreign governments and is discriminated against by buyers generally. The data (Table II) on the effect of sulphur sprays in lessening scale infestation of the fruit were obtained by Mr. E. W. Scott, of the Bureau of Entomology, in the course of some experimental work during 1911, at Fennville, Michigan. The influence of the sulphur sprays in checking the settling of the young scales on the fruit is here very marked and furnishes an added reason for the use of sulphur sprays as fungicides.

Apple scab is a fungous disease of the fruit and foliage of the apple, and ranks as the most destructive disease to which this fruit is subject. In unsprayed orchards it often causes the loss of 50 to 75 per cent of the crop, and not infrequently the entire crop of certain varieties is rendered unfit for market by the deformed, cracked and unsightly condition produced by the fungus. Affected fruit is usually small, unsightly, often cracked and does not keep well. However, since the practice of spraying has become general among apple growers this condition has been largely relieved. Apple scab is common practically wherever the apple is grown—in America, Europe, Australia, New Zealand and elsewhere. However, it is essentially a cool climate disease, and in the United States it is most destructive in New England, the Middle Atlantic States, the Great Lakes region, the Mississippi and Ohio Valleys and portions of the Pacific Northwest. In the Southern States it is not a serious pest except on the higher elevations, and then only on very susceptible varieties. The fungus causing apple scab

attacks the fruit and foliage, and to a much less extent the twig. The greatest damage is done to the fruit, on which it produces the scabby spots familiar to most apple growers. These spots are circular, though somewhat irregular in outline, dark gray or olivaceous in color, becoming blackish with age, and they range in size from mere specks to spots one-fourth inch, or sometimes one-half inch, in diameter. (See Figure 13.) The fungus ruptures the epidermis of the apple, forming a gray, jagged ring at the border of the healthy tissues. Two or more spots may coalesce, forming a large scabby area, in some cases covering one side of the apple. The disease prevents the normal development of the fruit, the affected side becoming dwarfed, pitted and otherwise deformed. It also causes the development of cracks, which may extend half-way around the apple and almost to the core. A large percentage of the affected fruit drops to the ground before maturing. In a cool, wet spring the blossom buds and young fruits in blossom may be attacked and destroyed. Occasionally, though rarely, the entire crop of an important fruit section may be destroyed in this manner. The disease occurs on both sides of the leaves, forming smoke-brown or olivaceous patches which become swollen and blister-like. (See Figure 14.) The affected leaves often curl somewhat and may drop prematurely. The fungus is said to occur also on the twigs, forming blackish-olive patches, but this is apparently not common in the United States.

Apple scab is caused by a fungus known as *Venturia pomi* Wint., which lives over winter in the fallen apple leaves. In the spring, when the weather becomes warm enough to start

apple trees into growth, the fungus becomes active, producing large numbers of spores, which are discharged into the air and carried to the young leaves, blossom buds, and later to the young fruit. If there is sufficient moisture present these spores germinate, producing infections that develop into the characteristic scab spots. Summer spores are soon produced on these spots, and through them the fungus may readily spread to other fruits and leaves. The period of greatest infection is from the time the first apple leaves appear until about four weeks after blooming. The fungus thrives best in cool, moist weather, such as is likely to occur during this period. Hot weather is very unfavorable to it, and infections rarely take place after summer sets in. However, in the New England States a second infection period sometimes occurs during September, and from these late infections small scab spots may develop after the fruit is picked and stored. Scab was one of the first apple diseases to receive attention by investigators, and its successful treatment was worked out as early as 1891. Until quite recently spraying with bordeaux mixture constituted the remedy for it, but owing to the injurious effect on both fruit and foliage produced by this otherwise excellent fungicide, especially during wet seasons, dilute lime-sulphur solution is rapidly coming into use as a substitute for it. Lime-sulphur solution has about the same fungicidal value as bordeaux mixture in the treatment of apple scab and produces decidedly less injury to fruit and foliage. Lime-sulphur solution may be purchased from several manufacturers or it may be prepared at home. Taking a solution that registers 32 degrees on the Baume hydrometer as a standard, the strength to use in spraying for scab is one and one-quarter or one and one-half gallons to each fifty gallons of water. On varieties seriously attacked by scab and in localities where the disease thrives the greater strength should be used, but in order to reduce the danger of injury to a minimum the weaker spray should be used where only slight outbreaks of scab are expected. Arsenate of lead, at the rate two pounds to each fifty gallons of solution, should be added to control the codling moth, curculio and other insects. Spray the trees (1) when the cluster buds open, just before

AFFIDAVIT

State of Idaho, }
County of Canyon, } ss.
I, F. S. Shoemith, of Nampa, Idaho, do hereby solemnly swear that I have used the J. D. Tower & Sons Pulverizer and Orchard Cultivator for four years on my farm for cultivating my orchard, and find it the most efficient implement for both orchard cultivation and seed-bed work. While others had watered their orchards twice before I began, the splendid growth of my two-year-old peach and apple orchard, as you will see by the photo, is the result of intense cultivation with the Tower cultivator. This machine had been used for six years previous to my taking same over, and this season (1912) makes the eleventh season for this machine, and not a cent has been spent for repairs, other than having the knives sharpened twice in that period. (Signed) F. S. Shoemith.
Subscribed and sworn to before me this 27th day of April, 1912.
(Seal) C. R. Hickey, Notary Public.

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blooming; (2) as soon as the petals fall, and (3) two or three weeks later. Varieties only slightly affected by scab, especially in the South, do not require the first application of this series, the two sprayings after the petals fall being sufficient to prevent the disease. On the other hand, in New England an extra application about the middle of August may be required to prevent late scab infections on some very susceptible varieties.

Continued in next issue

CONCERNING BEES

If people knew what a great source of profit is found in the keeping of bees and how interesting the work, there wouldn't be an unused square foot of ground on any farm in the United States. Bees are the only producers known to husbandry that yield a profit without cost of feed. They find their own pasture. They multiply so rapidly that they more than pay for the small initial expense of housing them, and the first cost of equipment is almost trifling. Bee culture may be made profitable by the children of the farm, or by the women members of the family. It may be carried on successfully in conjunction with the keeping of poultry or the growing of fruit. In the latter case, apiculture is found to be a great help toward more fruit and better fruit. Bees are little trouble, and require only occasional attention. They are easily handled and readily controlled. Best of all, they give a real service in hard cash, and that counts most on the farm. Every reader of "Better Fruit" ought to look into this matter of beekeeping and find out about its possibilities. The best way is to send twenty-five cents for a six months' trial subscription to *Gleanings in Bee Culture*, published by The A. I. Root Company, Medina, Ohio. They are headquarters for everything connected with bee culture, and are always glad to answer all questions relating to this fascinating pursuit. *Gleanings in Bee*

Culture contains information in any one number worth more than the cost of a trial subscription. You will find discussions by beekeepers and interesting information even though you never own a single bee. The trial subscription will prove a wise investment of a quarter.

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For Oregon and Washington

Furniture, Rugs, Carpets
and Building Material

HOOD RIVER, OREGON

APPLES SHIPPED FROM POINTS ON INTERSTATE RAILROADS IN THE UNITED STATES JUNE 1 TO DECEMBER 31, 1911

(Original shipments only; excluding receipts from other carriers. Excluding, in the case of many roads, shipments in less than carload lots.)

GROUP 1	Miles Operated by Railroads, June 30, 1909 (Reporting as to Apples)			Apples Originating on— Railroads Total, Computed	
	Total	Miles	Pct. Total	As Reported Bushels	on Mileage ² Bushels
I	8,152	4,569	56.0	1,917,931	3,424,877
II	24,510	9,743	39.8	3,294,601	8,277,892
III	26,483	12,557	47.4	2,431,813	5,130,407
IV	15,106	9,391	62.2	1,346,839	2,165,336
V	29,282	15,788	53.9	119,261	221,263
VI	53,209	26,511	50.8	2,933,812	5,775,220
VII	12,995	8,017	61.7	2,628,969	460,352
VIII	33,981	22,447	66.1	30,415	3,977,260
IX	18,707	6,264	33.5	4,112,573	90,791
X	22,659	12,434	54.9		7,491,026
United States	211,081	127,751	52.3	19,100,251	37,011,421

¹ Group I comprises the railroads of the New England States; Group II, New York (east of Buffalo, Pennsylvania (east of Pittsburgh), New Jersey, Delaware, Maryland, and northern part of West Virginia; Group III, New York (west of Buffalo), Pennsylvania (west of Pittsburgh), Ohio, Indiana, and the southern peninsula of Michigan; Group IV, Virginia, Central and Southern West Virginia, North Carolina and South Carolina; Group V, Kentucky, Tennessee, Georgia, Florida, Alabama, Mississippi, and Louisiana (east of the Mississippi River); Group VI, northern peninsula of Michigan, Wisconsin, Illinois, Minnesota, Iowa, Missouri (north of the Missouri River), North Dakota (east of the Missouri River), and South Dakota (east of the Missouri River); Group VII, North Dakota (west of the Missouri River), South Dakota (west of the Missouri River), Nebraska, Montana, Wyoming, and Northern Colorado; Group VIII, Missouri (south of Missouri River), Arkansas, Kansas, Oklahoma, Central and Southern Colorado, Northeastern New Mexico, and the "Panhandle" of Texas; Group IX, Texas (except the "Panhandle") and Southeastern New Mexico; Group X, Idaho, Utah, Nevada, Western New Mexico, Arizona, California, Oregon and Washington.

² Figures in this column are based upon the two preceding columns, and are subject to more or less error, depending upon how well the apple traffic of reporting railroads represents proportionately that of the nonreporting railroads. ³ Obtained by addition.—From the Crop Reporter.



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BEST
BEE
SUPPLIES**

Are standard—the best to be had for money-making purposes. We are Agents for Lewis Bee Ware. Send for Catalog. Most authoritative Bee Book issued, 34 pages of definite information. Illustrated.

The Chas. H. Lilly Co. Seattle.

10,000 Cars at \$1,055 To Introduce Reo the Fifth

By R. E. Olds, Designer

To the Thousands Who are Buying

I am not writing this to sell more cars. The present demand taxes our utmost capacity. And the cars in use will sell our future output better than words of mine.

In all my experience of 25 years I have never seen a success like that of Reo the Fifth. I have never seen a car so popular.

What I have to say now is to you who are buying, largely through faith in me.

I want you to know that, despite this rush, there are hundreds of us watching every car. We are giving more than we promised.

And you who took my word—who are buying first—are getting an underprice.

Just the Start

Reo the Fifth is not built for a season. The present demand is just the beginning.

This car, remember, is the final result of 25 years spent in car building. It marks my limit—the very best I can do. And no car of the future can greatly improve on it.

The cars we sell now are sent out to sell others—to create reputation for My Farewell Car. And you may be sure that not a car goes out until we know it is utterly perfect.

Our Costly Care

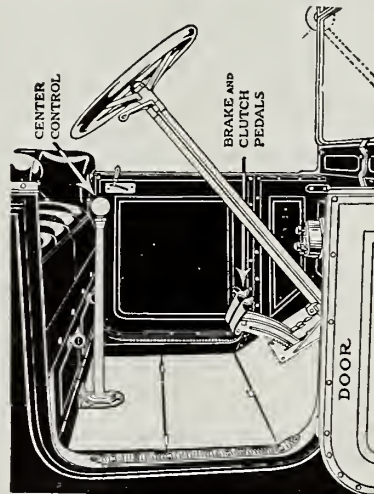
We analyze the steel that goes into this car. Every part is inspected over and over. Every part with a flaw is rejected.

Every important part is put to radical test before it goes into the car.

The engines are tested for 48 hours. The finished cars are given more severe

tryouts than in any other factory I know.

Parts are ground over and over to get utter exactness. Absolute silence in every part is demanded.



Each body is finished in 17 coats. The upholstery is perfect. To every part we give the final touch, regardless of time or cost.

For each of these cars is a salesman. Each will tell to hundreds of people the story of Reo the Fifth. And all our success in the future depends on the tale they tell.

The Underprice

There was never a car so underpriced as Reo the Fifth at \$1,055. Every man knows this who makes any comparison.

This price is ridiculous. It is too low to endure. The coming advance in the cost of materials is bound to send it soaring.

But we are content to sell 10,000 cars without regard to profit. So the present price will doubtless continue during the spring demand.

It goes to original buyers—to the men who first come to this car. And they will create our future market. Their cars will be our future advertisements.

You early buyers are getting an inside price, and I am glad to know it. But men who expect the present price to continue are bound to be disappointed.

The Center Control

This Year's Best Innovation

The success of Reo the Fifth is largely due to our new center control. Here, for the first time, we get rid of all side levers. Both doors in front are clear.

All the gear shifting is done by moving this center lever less than three inches, in each of four directions. It is done with the right hand.

Both brakes are operated by foot pedals, one of which also operates the clutch.

This arrangement permits of the left side drive, heretofore possible in electric cars only. The driver sits, as he should sit, close to the cars he passes and on the up side of the road.

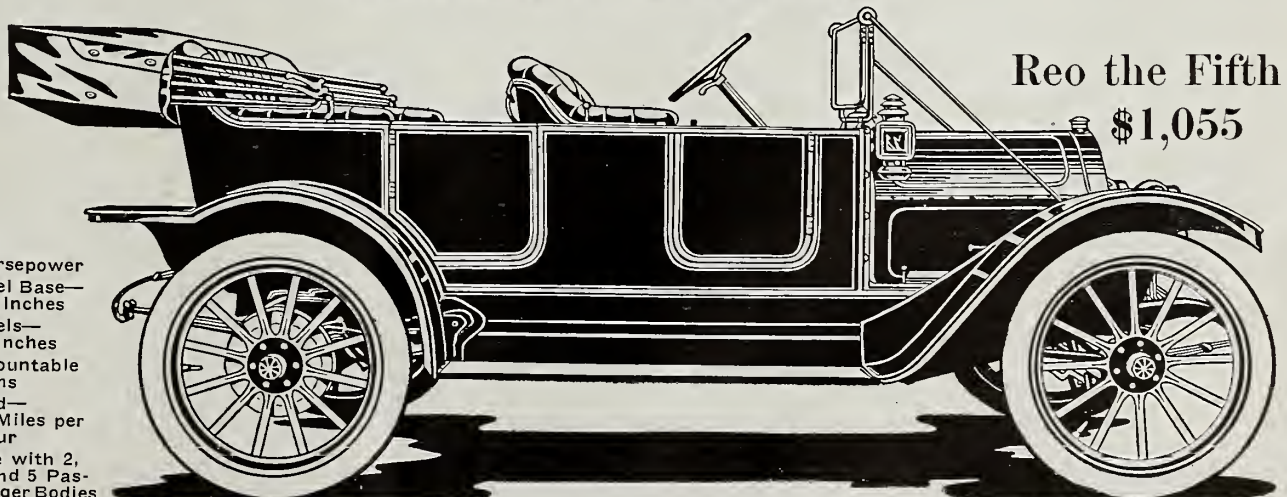
The old side drive will appear very awkward when you once see this.

1,000 Dealers

Reo the Fifth is sold by dealers in a thousand towns, so everyone can easily see it.

Our catalog shows the various bodies and gives every detail. Ask us to mail it to you. Address

R. M. Owen & Co., General Sales Agents for **Reo Motor Car Co., Lansing, Mich.**
CANADIAN FACTORY, ST. CATHARINES, ONTARIO



Reo the Fifth
\$1,055

30-35
Horsepower
Wheel Base—
112 Inches
Wheels—
34 Inches
Demountable
Rims
Speed—
45 Miles per
Hour
Made with 2,
4 and 5 Pas-
senger Bodies

Top and windshield not included in price. We equip this car with mohair top, side curtains and slip-cover, windshield, gas tank and speedometer—all for \$100 extra. SELF-STARTER, IF WANTED, \$20 EXTRA

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ADVERTISING RATES ON APPLICATION

Entered as second-class matter December 27, 1906, at the Postoffice at Hood River, Oregon, under Act of Congress of March 3, 1879.

In the State of Washington there are three large cities—Seattle, Tacoma and Spokane. We have given interesting statistics about Spokane and regret that we have no definite data at hand at present in reference to Seattle and Tacoma. Tacoma has a population of over 100,000 and Seattle at the last census in 1910 had over 230,000. Both of these cities are located on Puget Sound, which is one of the most beautiful sheets of water in the Northwest. Each city has splendid shipping facilities, both doing a large export trade. Seattle does an immense business with Alaska, being the principal supply point for this great territory which is so rapidly growing. There are a number of small cities with population all the way from 500 to 50,000 in Washington, Oregon and Idaho which are all indicative of the prosperity existing throughout every portion of the three Northwestern States. All these small cities have fine graded public schools and modern buildings. These cities are lighted with electricity and are progressive in every way. Nearly every small city and town has rural mail routes and also telephone communication with the surrounding country.

The Pacific Northwest—Washington, Oregon and Idaho—is a great big country over 600,000 miles square, that is just in its infancy in development. The resources of this territory are unlimited, consisting of fruit, wheat, oats,

barley, hay, lumber, cattle and sheep, and it has an almost unlimited mineral wealth. General farmers are prosperous as well as the fruitgrowers. There are thousands of acres to be obtained at reasonable prices throughout the Northwest for fruit growing and general farming of all kinds. Easterners can secure general or special information about any district by writing the commercial club of any of the cities through the Northwest, as nearly every one of importance has issued beautifully illustrated booklets full of interesting, practical and reliable information about the opportunities that exist, what is grown and what can be grown, and what profit can be made per acre.

Special booklets are issued by the various railroads—the Harriman system, Northern Pacific, Great Northern, etc., which can be obtained by writing the general passenger agents of any one of these companies. Booklets can also be obtained on any particular kind of farming like dairying, wheat growing, fruit growing, cattle raising or any other that a man may be interested in. The Northwest presents a field open to any class of farmers, with land at reasonable prices, that will pay splendid profits annually. The cities of the Northwest present splendid opportunities for manufacturing industries, and information about such opportunities can be secured by writing the commercial clubs of any of the cities like Portland, Seattle, Spokane or Tacoma.

The Northwest fruit crop will be the best in the history of the business, owing to the fact that this year there will be a good general yield in practically all sections, with a large amount of new acreage coming into bearing. Weather conditions have been very favorable, and as last year's crop was light it is to be expected that this year's crop will be a good one. The following is a summary of the estimate recently published in the Oregonian. The output can be summarized as follows:

Oregon—		Cars
Southern Oregon, apples and pears.....	800	
Hood River, apples.....	1,500	
Eastern Oregon (Grande Ronde), apples and pears	600	
Milton-Freewater, apples	700	
Other sections, apples.....	200	
Total Oregon	3,800	
Washington—		
Yakima Valley, apples and pears.....	6,000	
Wenatchee, apples and pears	4,000	
Spokane, Palouse, Walla Walla, apples..	1,000	
Columbia River district, apples.....	100	
Total Washington	11,100	
Idaho—		
Apples and pears	1,200	
Montana—		
Bitter Root district, apples.....	400	
Grand total	16,500	

However, attention is called to the fact that the above estimate indicates the number of cars which will be commercially shipped and does not include home consumption. It is a very difficult matter to get at the home consumption in the Northwest as well as anywhere else. However, it must be borne in mind that the season is yet early and these estimates were furnished

before the season is past for shedding. Some shedding of apple is occurring in some sections and it is quite possible that the estimate may be somewhat exaggerated, but to what extent it is impossible to tell at the present time. In fact estimating the apple crop at this season of the year is very difficult in any section. About the first of August fruit is thoroughly set and the apples of sufficient size so that the grower can form a very intelligent idea of the yield from his own orchard. At that season of the year each grower turns in his estimates to his association, and by compilation a very correct idea of the probable yield can then be ascertained.

General reports from the East indicate a pretty fair crop all over the United States. The Baldwins, which were light in New York state last year, will probably produce a good crop this year. The Ozark region, and Missouri and Arkansas in general, report a splendid crop. New England is also estimating a good crop, as well as Virginia and other states. However, attention must again be called to the fact that it is very early to figure very definitely at this season. Dry weather and the June drop may considerably change present ideas. Taking all the reports from the different sections at the present time, it looks as though there would be a good crop of apples all over the United States. Last year the crop of apples was reported as big in every state throughout the East, and a "barnyard crop" was referred to frequently, which means that all home orchards produce heavily, still the actual production was not such as to be beyond the consuming capacity of the markets and in general the apples brought fairly good prices. It is a question at the present writing whether this year's crop will exceed last year's or not, and with the same amount as last year, or an increased crop, with the improved marketing conditions, there is no doubt but that apples will command a good, fair price when intelligently handled and properly distributed.

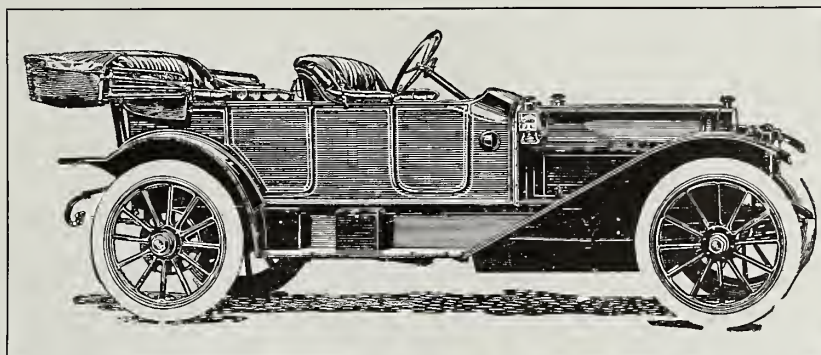
Portland is the commercial city of the State of Oregon, with an immense territory tributary to it, and is the jobbing city of the state. The prosperity of the state and its rapid development is indicated by the growth of Portland. The population in 1905 was 97,623; in 1910, 207,214, and with only an equal growth will mean 425,194 in 1915. In 1905 \$4,000,000 worth of new buildings were erected, and in 1910 \$21,000,000. The same increase will mean \$37,500,000 in 1915. The bank clearings in 1905 were \$228,500,000 and in 1910 \$517,000,000, which will mean \$806,000,000 in 1915. The postal receipts for 1905 were \$473,000 and in 1910 \$925,000, which indicates approximately \$1,500,000 in 1915. Paved streets increased from 18 miles in 1905 to 175 miles in 1911. Homes in Portland increased from 18,000 in 1905 to more than 40,000 in 1911. In 1905 Portland had 1,200 manufacturing establishments, and increased to more than

A Big Fruit Crop This Year "Spells" "Lots of Money for the Fruit Grower"

**You'll Want
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**EVERYBODY
DOES**

**INVESTIGATE
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4 and 6
Cylinder Cars**



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**PORTLAND
SEATTLE
SPOKANE
BOISE**



**IN OREGON
WASHINGTON
AND IDAHO**

30 Years in Business in the Northwest

2,500 in 1911, with an invested capital of over \$40,000,000, employing 35,000 people, who earned about \$15,000,000 annually, producing more than \$65,000,000 worth of products.

Northwestern Prosperity.—The crops in Washington, Idaho and Oregon this year will exceed by far any previous amount. According to a recent issue of the Oregonian the following crops will be produced, and which in volume will be worth \$142,715,000. Wheat, oats, barley, hay, fruit, wool and hops all promise splendid yields. The Northwest is particularly fortunate in having its chief industry composed of food products, which the public are obliged to have even though business in general may still continue to be affected

during the balance of the year by the presidential contest and other causes. Nevertheless the Northwest will have a splendid season of prosperity because the people must eat to live and the Northwest has the food products with which to supply them. The soil and climatic conditions in the Northwest are all extremely favorable for producing the above products, and not only a high class quality but a splendid quantity to the acre, which means prosperity to the farmers, and if the farmers are prosperous then the Northwest country in general will be prosperous.

Wonderful Growth of Spokane, Washington.—The growth of Spokane indicates the prosperity of the Inland Empire and the State of Washington.

In 1900 the population was 36,842 and in 1910 104,402. Spokane has 65 miles of paved streets and 140 miles of electric street railways. The public schools of Spokane have a total enrollment of more than 18,000 pupils and 430 teachers. There are 19 banks in Spokane, capitalized at \$5,000,000, with deposits aggregating \$35,000,000. The clearings in 1911 amounted to \$219,937,389. The postal receipts in 1911 were \$477,285. Spokane's jobbing trade in 1911 amounted to \$75,000,000; retail business, \$30,000,000; manufacturing, \$32,000,000; capital invested, \$28,000,000, and number of men employed 9,500, with payroll of \$12,000,000. Such are some of the statistics sent out by the Chamber of Commerce of Spokane in a bulletin recently issued.

Use Better Sprays Means Better Fruit

Further Information BETTER SPRAY CO., 215 Oregonian Building, Portland, Oregon

THE 1912 SPRAYER

IS NOW READY, and is as near perfection as human ingenuity can make it. If you are going to buy a sprayer, and want a dollar's value for every dollar you spend, ask us for catalog and prices.

If you are contemplating an irrigation plant we will give you the benefit of our engineers' experiences without additional cost, they having had many years of experience, thereby saving you time and money.

We also manufacture and carry in stock a full line of Scales, Trucks, Gasoline Engines, Windmills, Towers, Steam Engines, Boilers, Pumps, Pipe, Valves, etc.

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For Sale

60 acres famous Kittitas Valley; irrigated; 8 miles Ellensburg; ½ mile Thorp and Northern Pacific and Milwaukee railroads, school, churches, stores; 2,300 trees 3 years old, pedigreed stock Winesap, Jonathan, W. N. pear, perfect condition; balance alfalfa, chickens; altitude 1,600 feet; no killing frosts; soil and orchard conditions excellent; \$4,000 bungalow, 7 rooms, modern, new 1911; 175-foot driven well, over 2,000 gallons per hour capacity; tenant house, barn. Price \$250 per acre; terms. No exchange. For further particulars write owner. N. W. VAN CLEVE, Thorp, Washington.

Woman's Happiness Important to Rural Progress

By J. E. Bueck, of International Harvester Company's Service Bureau

IN the latter part of March there convened in Philadelphia one of the most noted assemblages ever brought together on the American continent. The gathering was made up of statesmen, scholars, educators, clergymen, professors of agriculture, scientists and agriculturists. The conference was held under the auspices of the Pennsylvania Rural Progress Association, the oldest agricultural society in the United States, having been organized in 1785. At this gathering were discussed the problems of the farmer's wife and the conditions under which she struggles, not only to bring up her family but to help make the living and means to alleviate her from isolation and bring about conditions favorable to her well being.

Miss Martha Van Rensselaer of New York struck the keynote to the meeting when she declared that rural progress depends on the happiness and comfort of the woman on the farm more than upon well tilled fields and well built and well stocked barns. "If the woman is not satisfied," she said, "and if no effort is made for her comfort the farmer might as well give up his aspirations to become successful; for the family cannot remain on the

farm if the wife and mother rebels. On thousands of farms in this country there is every reason for rebellion, for absolutely nothing is done to give the woman the aid she needs in housekeeping, in the bringing up of her children and the performance of her share of the farm duties. How many men who have reapers and binders think of the washing machine and the ironing machine for their wives? In how many cases would the woman think this was a needless expense, simply because she has been trained to believe that her health and her happiness and conservation are inferior matters and do not measure up to the needs of the livestock and the farm? The farmer's wife should be taught how to conserve her time and energy, how to get the latest labor-saving devices, how to do her work scientifically and intelligently, and how to combine pleasure with duty. She should have some idea of art, so that her home may be beautiful, and she should not be given to believe that there is nothing in life beyond the dreary routine of her daily toil."

Mrs. Jean Kane Foulke of West Chester, Pennsylvania, spoke along the same lines, emphasizing the field for educational work among farmers' wives, who, she said, do not know the value of good cooking, have no idea of the application of business methods to housekeeping and are not even, in many parts of this state, good butter makers, because they have not been taught to give scientific consideration to the task in hand of making farm life interesting and profitable. Mrs. Foulke declared that part of the trouble is caused by the division of interest on the farm; that the man thinks that the stock and the products are his lookout and that his wife should do all the work of the house unaided. "No matter how many improvements are inaugurated, how many reforms brought about," she said, "you will never get

the ideal condition on the farm until the man and the woman realize that their tasks are equally important and that their interests are one. The man must give up the old notion that his wife is his chattel and simply part of the machinery of the estate, and must allow her some time for individual development, some time to make herself a real companion for him."

Among the more noteworthy helps that have recently been placed within the reach of the farmer's wife is the gasoline engine. It pumps the water for cooking and other purposes and makes it possible for the country home to be lighted by electricity. The gasoline engine is also utilized to operate the cream separator, washing machine and churn, and this in a large measure removes drudgery from the woman's work on the farm. Where the farm is equipped with all these modern appliances the children can be a material help and learn to do many things that will be of service to them in after years.

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We have a complete stock in ornamental trees, shrubs, vines and perennial plants.

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FLETCHER & FLETCHER, Hood River, Oregon



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for representing "MOTOR CAR" in any American community, and in view of the fact that the Gasoline Engine has rapidly become The Universal Power of the Hour, on the Farm and in the City, this offering will prove an invaluable asset to any family. Even though you have no engine now, it is this splendid opportunity you need and can so easily acquire for just a little time and much less effort than you think.

L. E. JOHNSON, owner of the beautiful Maple Lawn Farm at Kenyon, Minn., writes:

"Enclosed please find check for five years' subscription to 'Motor Car.' I find it the most practical and up-to-date Magazine of its kind."

H. P. LASHER, live farmer, Cushing, Ia., writes: "Your publication is full of information I had not been able to find elsewhere."

Factory Catalogs giving only one point of view are confusing, while our broad treatise is all non-technical, readable and comprehensive with elaborate illustrations so all can easily understand.

The CYCLEMOBILE we give is a newly perfected machine, for pleasure or touring, not on the market for sale on account of our large exclusive contract with the inventors. It is built like a real Motor Car with two speeds, forward and reverse, besides a neutral coaster speed. The Body and Hood are Pressed Steel and second growth ash, supported on a Chassis frame of Rolled Steel angle iron, capable of carrying the weight of five full grown men. The Axles are also of Steel and wheels Rubber Tired. The front wheels pivot on regulation Motor Car steering knuckles, eliminating all danger of upsetting on curves. We simply cannot give you one-hundredth part of the real Specifications in this limited space, but send in the coupon and we will TELL IT ALL.



MOTOR CAR PUB. CO., KANSAS CITY, MO.

Dear Sirs: B. F. P. C.

Kindly mail me full details and Specifications of your CYCLEMOBILE offering, and oblige,

Sincerely yours,

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At low prices. Liberal terms for small investors. Good soil, fine climate, two railroads, excellent markets.

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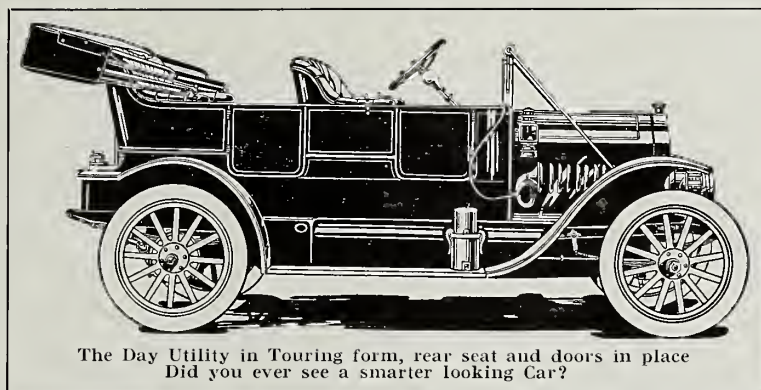
Near Springdale, Stevens County, Washington, are placed on the market in tracts of 40 acres or more. Ask for information and booklet.

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Two Cars in One and Each A Perfect Car

The man who thinks he "can't afford to own an automobile" will have to revise his ideas. No man who is in business—whether it be the business of farming or fruit growing or merchandising, can afford **NOT** to own the Day Utility Car.



The Day Utility in Touring form, rear seat and doors in place
Did you ever see a smarter looking Car?

The Day Utility Car

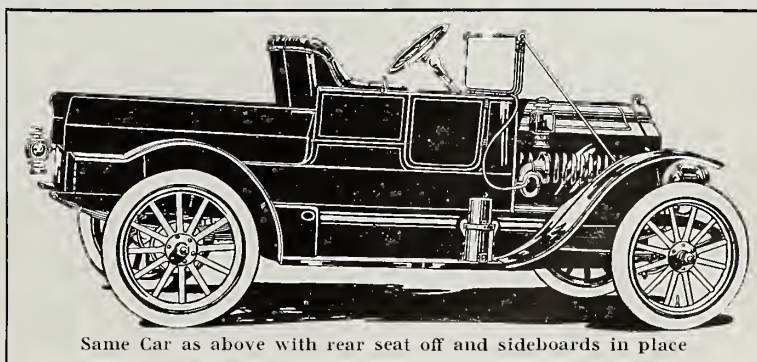
marks an era of economy and convenience in automobile building and automobile owning that places the motor car within reach of thousands who have heretofore considered it an expensive luxury.

The Day Utility Car is actually two perfect cars in one. It is a roomy five-passenger car, designed along strong, graceful lines—a car of beautiful proportions—and yet—you press a spring lock—the rear seat and doors come off—side boards are slipped in place—and in half a minute you have a clean cut, snappy delivery wagon with ample body room and a capacity of 1,000 pounds.

A Car for Farmers and Fruit Growers

Exactly the car that farmers, fruit growers, gardeners, as well as merchants, plumbers, contractors and others have been waiting for and wishing for these many years.

A car that will do the work of two or three horses—do it better and quicker, and one that is never too tired after the day's work is over to take the family out for a thirty or forty or fifty-mile spin in the evening.



Same Car as above with rear seat off and sideboards in place

The Day Utility Car is a Money-Maker instead of a Money-Spender—It Actually Saves its Cost in the Increased Efficiency and Decreased Cost of Delivery Work

The rear seat and door are instantly removable—no bolts or screws to take out—simply an eccentric lock that is instantly released, yet holds the seat firmly in position. The space under the front seat is all open, giving the delivery body extreme roominess. Side boards are provided that are instantly slipped in place and add still more to the capacity of the body.

The illustrations shown are from photographs and give an accurate idea of the car in its two forms.

Did you ever see a handsomer touring car—a roomier, smarter delivery wagon, and the price complete with quick detachable tires, gas and oil lamps, tools, etc., is only \$1,150.

Top and Windshield, if desired, are \$50 extra

Write for the Catalogue of this remarkable car

THE DAY AUTOMOBILE COMPANY
DETROIT, MICHIGAN

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National Land and Irrigation Journal

30 South Market Street

CHICAGO, ILLINOIS

Cranberry Culture Is Big Income Producer

Dan McAllen, in Portland Oregonian

NEARLY if not quite all those who have resided on this Coast any length of time have heard of Long Beach, Washington, merely as a summer resort. Beyond that they know little or nothing about it. Even those who come here year after year for rest or pleasure pay little attention to surroundings, being continually on the go, surf bathing, riding, driving or other forms of amusement. The writer has been coming here for years, over thirty years, and never stopped to think where those fine strawberries, tasty butter and cream and other good things came from. He simply took it for granted that all those good things to eat and drink came from Portland, or more than likely from nearby Astoria. Fancy my surprise on learning that almost everything for the table was raised here; also that the finest cranberry land in the United States was on this peninsula. A few men own nearly all the cranberry lands, Messrs. Arthur, Senator Espey, Espey Estate, Giles and Williams being in control.

J. M. A. Lane and Frank Nau, Portland pioneer druggists, own a few acres each. The pill makers know that there is more money in cranberries than castor oil. Cold turkey and cranberry sauce! Just the thought of it. Very few people know where cranberries come from or how they are grown. The

good housewife who purchases a quart once a year for the Thanksgiving turkey never gives the matter a thought, except the fancy price she has to pay. Talk about your apple, peach or prune orchards or strawberry beds or your orange groves of California, but for guaranteed income from a crop that never fails give me a few acres of cranberries in bearing. There is only one cost, preparing the land and planting, as the plants need no care except occasional weeding. Are you aware that cranberry land is scarce and not to be had anywhere by squatting on it? Just to give you some idea of the land suitable for cranberry culture in the United States, according to government reports the entire acreage is 25,000; over 20,000 is now in bearing, leaving only about 4,000 acres available for planting. In order to give you an idea of price, facts and figures, an acre of cranberries will yield from 75 to 150 barrels of cranberries and find a ready local market at an average price of \$10 per barrel f.o.b. Long Beach. The land here is remarkably fertile for the growth of all kinds of vegetables, also strawberries, which grow in abundance up to the middle of November. The strawberries grown here are large enough to slice, have a fine flavor and delicious taste.

This is a fine spot for dairying; anybody with a taste for sweet butter and pure milk—and who hasn't?—is certain to pronounce the products the best ever. I have a serious notion of making this my future home, for I love the sandy beach, the surf bathing, the walk through the evergreen trees, and best of all, the invigorating, life-giving salt air. Don't get excited over the few remarks on cranberries. Cranberry land is not to be had for the same price that good farming land can be secured for. The preparation of cranberry land will cost, aside from the original price, from \$350 to \$500 an acre, in some cases more. However, for a man here who performed all his own work the actual outlay was forty dollars for the plants. This for one acre.

I had the pleasure of meeting Governor Hay here, and with the party, H. E. Deputy, president of North Beach Push Club; J. B. Pape and Theodore Jacobson, spent a delightful afternoon motor-ing and viewing many scenic points. Governor Hay is a fine specimen of the open Western type, with a Boston polish and, to use a woman's phrase, of "charming personality." Governor Hay is intensely interested in the development of the State of Washington, also Oregon, remarking, "what helps one state helps the other." Anticipating the opening of the Panama canal in a few years and what it means to this Coast, the governor suggests that "all Northwestern States should make appropriations, send agents with reliable litera-

ture to Northern European countries, the British Isles and Ireland and secure emigrants for our waste lands, particularly logged-off lands. The governor favors more fish hatcheries, although there are twenty or more in Washington. I. L. Adams, formerly in the grocery business in Portland, showed us a half-acre cranberry patch where he gathered seventy barrels last year and sold them at an average price of nine dollars f.o.b. Long Beach. Mr. Adams expects to get eighty barrels this year. Here is where you get your Toke Point, Shoalwater Bay and Eastern oysters.

Izaak Walton has many disciples here. E. B. McFarland is an expert fisherman and makes good use of his time. Mr. McFarland is out nearly every morning, and catches enough sea trout, black bass and tom cod to supply several large families, and Mr. McFarland delights in dividing up with his friends. This morning he presented me with a half-dozen speckled beauties—sea trout. I was much pleased to get them, as the Rev. J. D. O'Brien was my guest at dinner. The trout were delicious. Clyde and Robert Porter, of Hotel Saltair, keep the table well supplied with choice fresh fish every day, including crabs and clams. There's another thing about Long Beach that may be of interest. Well, there goes the bathing whistle.

Cherry Gummosis

Some of the results of investigations on cherry gummosis made by Fred L. Griffin, formerly a graduate student and assistant in plant pathology at the Oregon Agricultural College, are given in a preliminary report in Science: "Certain varieties of the cultivated sweet cherries found in the Pacific Northwest are very subject to a diseased condition which is commonly known as 'cherry gummosis,'" says Mr. Griffin. "The disease is characterized by more or less copious exudation of gum from the trunk, branches, spurs and buds as well as by a postulated appearance of the bark near the diseased areas. Often but little gum is exuded, but in such cases an examination of the affected trees generally discloses discolored tissues which are infiltrated with gum. Such areas are spongy to the touch and are usually discernible by the variation in color of the bark as compared with that of the normal. Cherry gummosis appears in both a localized and generalized form. In the former the disease is apparently confined to rather limited areas on the trunk or branches, such areas being most often associated with a blighted spur or bud. In the generalized form large areas of the trunk or branch may become involved, and it often results in complete girdling. This latter type of gummosis often appears to originate in the crotch of the tree."—Corvallis (Oregon) Gazette.

This Tree

was planted on April 15, 1911. It was one of twenty-five of our yearling apple grafts which had been dug the previous November, and which were shown at the National Apple Show, Spokane, for a week, taken home, kept in storage till date mentioned. All were then planted in a row in our field, headed back to thirty inches, grown all summer just as you would in your orchard, only you'd give them individual care that these didn't get. These trees all grew alike as so many peas, and on November 17, 1911, we dug them all carefully to get the entire root system, and there it is, a yearling orchard tree with seven months' growth.

You never saw better. They look like three-year-olds. And every Washington Nursery Company tree will look the same way if it's planted right and cared for properly.

Our Trees Are Not "Pedigreed"

They are grown from scions procured from reputable bearing orchards. They are not pedigreed, neither is there a pedigreed tree being sold today, and those who advertise "pedigreed" stock are deceiving you. You can't any more pedigree an apple tree by gazing at the tree, eating the fruit and pronouncing it "first-class" and putting a blue or red mark on the bark than you can pedigree a cow by examining her teeth, drinking her milk and admiring her calf. It takes a record to warrant a pedigree, and the wise fruitmen are tired of this claim of "pedigreed trees" by every Tom, Dick and Harry who is his own judge, jury and expert on every variety in every land and climate. What you want to know is whether or not the parentage is a true, clean, healthy strain, whether the man who grows and sells the trees is responsible and has the system of grafting, budding, planting, marking, growing, digging, grading and shipping that gets you what you order.

Well, we have all that and we guarantee everything we sell, and we welcome your business and your most careful inspection of our stock and our methods. Last season we filled nearly twelve thousand individual orders. Next month we'll tell you what some of the customers said.

Our salesmen are already in the field. We are booking more business than ever before this early in the season. If you need trees, drop us a line.

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More salesmen for a few
good unoccupied fields

WASHINGTON NURSERY CO.

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YEARLING ORCHARD
TREE,
DUG 7 MONTHS
FROM PLANTING
AS A YEARLING
PIECE ROOT
APPLE GRAFT

3 FOOT RULE.

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HOOD RIVER, OREGON

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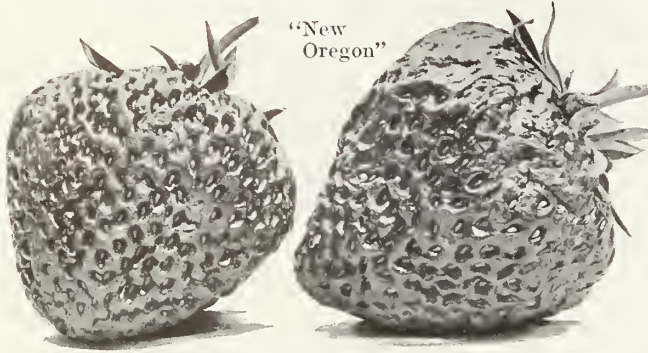
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THE VARIETIES

we offer are the leading commercial sorts; our select strains are the true ones and plants are the best that can be produced.



Shipments begin in September and you should order early for delivery in season. For prices and description see our catalog.

32 page book on Strawberry Culture FREE



Portland Seed Co., Portland, Oregon

Proposed Bill for Standard Apple Box

By C. E. Whistler, Medford, Oregon

DOUBTLESS many readers of "Better Fruit" are aware of the action that was taken by the various representatives who appeared before the committee on coinage, weights and measures, at Washington, March 7, 1912, relative to the Sulzer apple box bill which was introduced into congress January 15 and referred to said committee. The original bill as introduced was withdrawn and a substitute bill therefor was introduced, read and referred back to the said committee for consideration. The substitute bill attempted to establish a standard barrel and grades for apples when packed in barrels, which bill received the support of all representatives present. The box features of the original bill were left to the box users to regulate as their several interests might require, and a request was made both by W. L. M. Wagner of Chicago and W. D. Tidwell, secretary of Western Federation of Fruit Jobbers, that the

writer draft a bill which would embody the interests of the box users, and to submit the same to them for consideration, with the assurance that, if along the lines talked of, they would lend it their support. I have, therefore, drafted the enclosed bill and submit it to you for consideration, and if it is actable to you, for your endorsement and support. Our great effort now should be to secure harmony among the box using states, and when an agreement is so reached there will doubtless be no difficulty to secure its passage. I trust you will give this your support and general publicity. The draft of the proposed bill follows:

A bill to establish a standard apple box and for other purposes. Be it enacted by the senate and house of representatives of the United States of America in congress assembled:

Section 1. That the standard box for apples shall be of the following dimensions when measured without distention of its parts. Depth of end, ten and one-half inches; width of end, eleven and one-half inches; length of box, eighteen inches inside measurement, representing as nearly as possible two thousand one hundred and seventy-three and one-half cubic inches.

Sec. 2. That any box in which apples shall be packed and offered for sale that does not contain the required number of cubical inches as prescribed in section 1 of this act shall be plainly marked on one side and one end with the words "short box," or with words or figures showing the fractional rela-

tion which the actual capacity of the box bears to the capacity prescribed by section 1 of this act. The marking required by this paragraph shall be in block letters of the size not less than seventy-two point block gothic.

Sec. 3. That the box, when packed and offered for sale, shall bear upon one end in plain figures the number of apples contained in the box. Also in plain letters the name of the person, firm, company or organization who shall have first packed or authorized the packing of the same; also the name of the locality where the apples were grown; also the name of the apples contained in the box.

Sec. 4. That the apples contained within the box when so packed and offered for sale shall be reasonably uniform in size.

Sec. 5. Whoever shall offer apples in closed boxes that are not within the meaning of this act shall be liable to a penalty not exceeding one dollar for each box so packed and offered for sale, to be recovered at the suit of the United States in any court having jurisdiction. This penalty to be recovered under the provision of an act approved June 30, 1906, entitled, "An act for preventing the manufacture, sale or transportation of adulterated or misbranded, or poisonous or deleterious foods, drugs, medicines and liquors, and for regulating traffic therein and for other purposes." (Thirty-fourth statutes, page 768.)

Sec. 6. That this act shall be in full force and effect from and after the first day of, 191..

[Mr. C. E. Whistler of Medford, Oregon, who was sent to Washington, D. C., by the Rogue River Valley Asso-

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ARSENATE OF LEAD

Should be seriously considered by fruit men, because it can be kept indefinitely, has a constant weight and always has a 100 per cent value.

All forms of Paste Arsenate of Lead rapidly lose the moisture, which renders it hard and granular and unfit for service. "Electro" is the only dry form Arsenate of Lead in a pigment condition, and therefore has greater spread and greater strength.

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Saves times, labor and money

It is a household necessity and a comfort to all who use it. A single package makes a full pint.

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ciation to oppose the Lafean and Sulzer bills at the two different sessions of congress, has written a proposed bill for the standard apple box. Mr. Whistler has probably given this matter as much consideration as any man in the Northwest, and therefore his ideas certainly are valuable. As has been stated in the columns of "Better Fruit," the Eastern fruitgrowers and dealers did not understand fully the requirements of the Northwestern box district. When the Lafean bill and the Sulzer bill came up for consideration the Northwest was ably represented by C. E. Whistler of Rogue River Valley, Oregon; Joseph A. Wilson of Hood River, Oregon; L. H. Titchenal of Wenatchee Valley, Washington; W. K. Newell of Willamette Valley, Oregon, and J. L. Dumas of Dayton, Washington. These representatives presented our views in such a reasonable way that the advocates of the Lafean and Sulzer bills finally saw the wisdom of giving the Northwest proper consideration, consequently the box problem was eliminated from the Sulzer bill. Above we publish a letter and the proposed bill by Mr. Whistler, who, it is assumed, will be pleased to receive any suggestions in reference to the matter for future consideration.—Editor.]

Benefit of Cold Storage

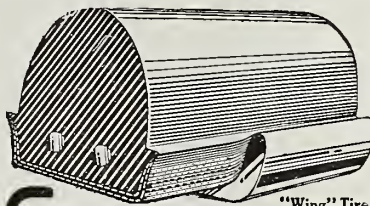
MODERN cold storage is the one great branch of the apple industry in which the producer, the consumer and the dealer are most profoundly interested, and without which profitable fruit growing and operations on a large scale would be impossible. It is the thing which gives safety and stability to the apple business, and without the friendly support of which the apple industry would not succeed. According to the latest figures available there are in the United States 1,100 cold storage plants, warehousing annually food products to the value of hundreds of millions of dollars, with capital invested in it and industries wholly or in part dependent on mechanical refrigeration to the extent of more than a billion of dollars. Of apples alone there are stored more than four million barrels.

Recent developments have raised a hue and cry against the cold storage, which indicates that either the public lacks information or that cold storage has become a public menace that calls for legislation looking to lawful public control. Let us for a moment consider the benefits the consumer derives from cold storage as applied to the apple industry, for no matter what may be urged against them by reason of antiquated eggs and mummified poultry, whether true or false, this is not a subject for discussion by apple men, but is within the province of magazine writers, ambitious legislators and other wise men. No sound argument can be raised against stored apples on hygienic grounds.

As a properly conducted enterprise, there can be no disputing the fact that cold storage of apples serves a great

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Note this patented wing. How it presses against the channel, thus preventing mud, dirt, grit or water from getting in and quickly rusting the rim and destroying the tire base. This tire remains sound. Won't creep or get loose. Gives it most wear. Will protect your carriage and greatly lengthen its life. Being of tough, springy rubber, it is exceptionally easy-riding.

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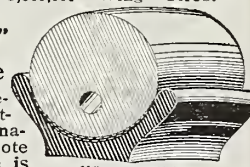
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So many carriage users have now asked for Goodyear "Wing" Tires that 74 out of every 100 makers of carriages are putting Goodyear "Wing" Tires on their carriages.

Thus the demand for Goodyear "Wing" Tires in the past season has increased 24 per cent. And the present season indicates an increase, we estimate, of 81% over the one just passed. More carriage dealers now sell Goodyear "Wing" Tires than any other kind. In 13 years we have made and sold 3,000,000 "Wing" Tires.

Our "Eccentric" Cushion Tire

is especially designed for light-vehicles—runabouts, etc. Note the wire hole is below the center.

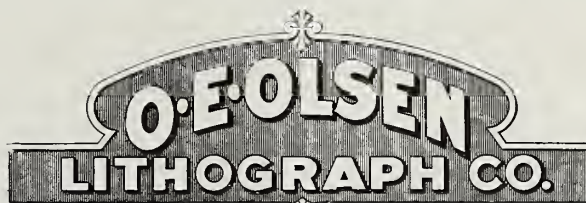


"Eccentric" Tire

This increases the wearing depth of the tire over half and the life of tire by same proportion. This tire stays firm in the channel.

The high-grade, resilient rubber used in the "Eccentric" Cushion Tire makes it remarkably easy-riding. Always gives satisfaction.

Write a postal now for our latest Carriage Tire Booklet and name of dealer in your town who sells Goodyear Carriage Tires.



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there is any nursery, East or West, that enjoys a better reputation than ours for furnishing good, clean, healthy stock. We are willing to match our stock and service against any nursery in the world. For several years we have been supplying most of the trees planted in the famous Wenatchee Valley, and the tens of thousands of growing trees, furnished by us, speak louder than words.

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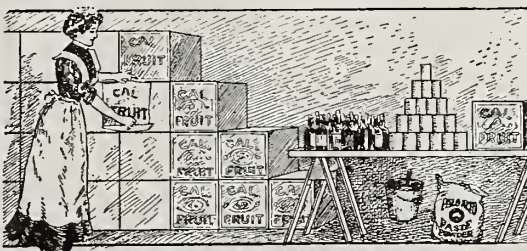
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"Better Fruit" offers to its readers what it considers the finest list of clubbing offers ever placed before the public in the Northwest. Its variety is one that must appeal to readers of all classes. Look it over carefully, select the one you want and send us the proper amount and we will do the rest.

The Ladies' World.....\$.50
Modern Priscilla......75
"Better Fruit".....1.00
Total.....\$2.25
All for.....1.85

Garden Magazine.....\$1.50
American Magazine.....1.50
"Better Fruit".....1.00
Total.....\$4.00
All for.....2.90

Delineator.....\$1.50
Good Housekeeping.....1.50
"Better Fruit".....1.00
Total.....\$4.00
All for.....2.75

Scientific American.....\$3.00
"Better Fruit".....1.00
Total.....\$4.00
Both for.....3.50

Fruit Grower (St. Joe).....\$1.00
"Better Fruit".....1.00
Total.....\$2.00
Both for.....1.50

The Ladies' World.....\$.50
Pictorial Review.....1.00
Modern Priscilla......75
"Better Fruit".....1.00
Total.....\$3.25
All for.....2.15

Good Housekeeping.....\$1.50
Cosmopolitan.....1.50
World Today.....3.00
"Better Fruit".....1.00
Total.....\$7.00
All for.....3.70

Review of Reviews.....\$3.00
McClure's.....1.50
Scribner's.....3.00
"Better Fruit".....1.00
Total.....\$8.50
All for.....6.15

The Etude.....\$1.50
"Better Fruit".....1.00
Total.....\$2.50
Both for.....2.00

American Bee Journal.....\$1.00
"Better Fruit".....1.00
Total.....\$2.00
Both for.....1.65

Review of Reviews.....\$3.00
Scribner's.....3.00
Good Housekeeping.....1.50
"Better Fruit".....1.00
Total.....\$8.50
All for.....6.00

Everybody's.....\$1.50
American Magazine.....1.50
Delineator.....1.50
"Better Fruit".....1.00
Total.....\$5.50
All for.....3.90

Housekeeper.....\$1.50
Review of Reviews.....3.00
McClure's.....1.50
"Better Fruit".....1.00
Total.....\$7.00
All for.....4.50

Country Life in America.....\$4.00
Review of Reviews.....3.00
McClure's.....1.50
"Better Fruit".....1.00
Total.....\$9.50
All for.....6.75

Country Life in America.....\$4.00
Outing.....3.00
"Better Fruit".....1.00
Total.....\$8.00
All for.....6.25

Review of Reviews.....\$3.00
Woman's Home Companion.....1.50
McClure's.....1.50
"Better Fruit".....1.00
Total.....\$7.00
All for.....4.50

Sunset, Pacific Monthly.....\$1.50
"Better Fruit".....1.00
Total.....\$2.50
Both for.....1.90

Success and National Post.....\$1.00
American Magazine.....1.50
"Better Fruit".....1.00
Total.....\$3.50
All for.....2.70

Delineator.....\$1.50
Success and National Post.....1.00
Everybody's.....1.50
"Better Fruit".....1.00
Total.....\$5.00
All for.....3.60

Good Housekeeping.....\$1.50
Success and National Post.....1.00
American Magazine.....1.50
Cosmopolitan.....1.50
"Better Fruit".....1.00
Total.....\$6.50
All for.....4.40

Century.....\$4.00
Everybody's.....1.50
World's Work.....3.00
"Better Fruit".....1.00
Total.....\$9.50
All for.....6.60

Country Life in America.....\$4.00
World's Work.....3.00
Everybody's.....1.50
Delineator.....1.50
"Better Fruit".....1.00
Total.....\$11.00
All for.....7.75

Kansas City Weekly Star.....\$.25
"Better Fruit".....1.00
Total.....\$1.25
Both for.....1.00

Woman's Home Companion.....\$1.50
"Better Fruit".....1.00
Total.....\$2.50
Both for.....1.80

Woman's Home Companion.....\$1.50
McClure's.....1.50
"Better Fruit".....1.00
Total.....\$4.00
All for.....3.00

Weekly Oregonian.....\$1.50
"Better Fruit".....1.00
Total.....\$2.50
Both for.....1.75

Everybody's.....\$1.50
St. Nicholas.....3.00
"Better Fruit".....1.00
Total.....\$5.50
All for.....4.50

Breeders' Gazette.....\$1.75
"Better Fruit".....1.00
Total.....\$2.75
Both for.....2.00

Northwest Poultry Journal.....\$.50
"Better Fruit".....1.00
Total.....\$1.50
Both for.....1.25

World's Work.....\$3.00
Everybody's.....1.50
Delineator.....1.50
"Better Fruit".....1.00
Total.....\$7.00
All for.....4.50

Garden Magazine.....\$1.50
"Better Fruit".....1.00
Total.....\$2.50
Both for.....1.90

Good Housekeeping.....\$1.50
Pictorial Review.....1.00
"Better Fruit".....1.00
Total.....\$3.50
All for.....2.50

Semi-Weekly (Oregon) Journal.....\$1.50
"Better Fruit".....1.00
Total.....\$2.50
Both for.....1.75

public good to the consumer by extending very largely the period in which he may be supplied with fresh fruits, delivered in its most wholesome condition—just as nature produced it from the trees instead of enjoying the fruit for a short period only, it is served to him nearly the whole year round. It would be difficult, indeed, to estimate the health and enjoyment this affords. By the prevention of waste it also augments the extent of the crop and increases the food supply to the extent thus made available, but which would otherwise go to waste. This is a very important item to the consumer which should not be lost sight of.

These are the chief benefits that the consumer derives, and against these may be computed the legitimate cost. What is the cost? Under a properly conducted enterprise the entire cost to the consumer is not a large item. In fact, so far as the matter of storage is concerned, the cost is nearly, if not quite, offset by the saving of waste in the food supply, thus holding prices to a lower level than would be the case if a large per cent of the crop should go to waste, as it otherwise would. Consequently if the consumer has reasonable grounds for complaint it lies in another direction and is quite apart from the principle of cold storage.

Has the value of cold storage to the producer been equally as well established? An affirmative answer to this proposition would raise no dissenting voice from any source and needs no argument to sustain it. Without cold storage to preserve his crop the orchardist would be like a ship without a rudder, and would face ruin and disaster. Before cold storage, with only a small percentage of the present production, he had only two alternatives—to sell his fruit at gathering season in glutted markets or to hold it with all the attendant risks of deterioration and waste until it could be disposed of to better advantage. From a crop that demanded the closest attention of the grower throughout a long winter, with its attendant risks of frost and decay, with fluctuating markets and uncertain values, it has become his quickest crop to realize on as well as one of the most profitable. By reason of the utility of cold storage he always has at hand a ready market for the full value of his fruit and a responsible dealer to sell it to. If he meets with losses it is only when he assumes the role of the speculator or attempts to use a "piker" to force an extravagant and unwarranted price for his product; from the producer's viewpoint cold storage is an intestimable advantage.—Exchange.

Editor Better Fruit:

I am always glad to add subscribers, for I feel certain of the thanks of all I get to join the ranks. If all the British Columbia fruit-growers did so I think it would save our government the need of sending out fruit experts to lecture the Farmers' Institutes. W. J. L. Hamilton, Bromore, British Columbia.

Editor Better Fruit:

I have just received a copy of "Better Fruit," and after a somewhat hasty examination I do not hesitate to pronounce it the best magazine along fruit growing lines I have ever seen. Yours very truly, Daniel T. Hembrickson, Port Monmouth, New Jersey.

These rates do not apply in Canada owing to extra postage.

Economy A Factor in Commercial Fruit Growing

By H. C. Hetzel, Corvallis, Oregon

HAPPENING to pick a copy of the Portland Journal the other day, my attention was attracted to an article having a heading in big black type which read something like this: "If every person in the United States should eat eighty-nine apples throughout the year the consumption would exceed the production." The object of the editor in making such a statement was not to impress upon us the fact that we are not eating enough apples—that is, he does not mean that we are now consuming eighty-six apples and that we must increase our appetites and eat three more, but rather the fact that there are not enough people who are really eating apples. I think you will all agree with the author of that article that the ideal condition for the fruit industry would be to have every one eating apples, to have our fruit distributed throughout the whole United States, to every town and city in the land. This would be ideal for the reason that it would mean the greatest possible demand. I admit that such an ideal is theoretical. Like most ideals, it cannot be absolutely reached. We can never hope to place eighty-nine apples before each and every citizen of our country, but if this is ideal should we not as Oregon producers, as marketers, be at least approaching it, be progressing in that direction?

Let us look for a minute at the so-called advancement made by our producers in Oregon. Not many years ago the fruitgrower was bringing his apples to market in the bottom of a wagon. This insufficient method finally gave way to the barrel. In the course of time some genius discovered the pride of Oregon—the Oregon apple box. Some other gentleman found that his income was increased by using a lithograph on the outside, a picture in bright red, white and blue. Another that he could obtain ten cents more per box by the use of lining paper. Finally the wrapping paper for each individual apple was adopted, and many energetic growers have a pretty little picture printed on every wrapper. Judging from this rapid advancement the day is evidently not far off when some Websterian-brained fruitgrower will tie a

little pink baby ribbon on the stem of every apple, and as a reward for this brilliant idea a fifty-cent increase in profit per box would be a conservative estimate.

Which way, then, are we going? Are our lithographs and wrapping papers helping to place our fruit within the reach of the ordinary man? Every cent that we add to the expense of putting that box of fruit on the market limits the number of people who are able to buy it. It is evident from such a state of affairs that instead of progressing toward our ideal that we are absolutely going in the opposite direction. But you say, "Your ideal does not apply to Oregon—we don't want it—we as Oregon growers produce the best, and there is always a demand for the best." It is true that there is always a demand for the best, but we must also keep in mind the fact that the best is but a small percentage of the whole and that in order to place our industry on a permanently paying basis we must make a profit from every grade of apples, from the winner at the county fair down to the wormiest cull. Such a statement needs no further proof than simply a reference to our more highly perfected industries in which practically every portion of the product is utilized and made to bear a profit. Would it not, then, be better after all to come back to the ideal condition and sell all of our fruit to all of our people at a reasonable price than to sell the best of our fruit to a few people at an exorbitant one?

But there is only one way in which we can bring down our prices to a reasonable basis, and that is by practicing absolute economy—economy in growing, in packing, in marketing. We are spending too much money as growers. The Eastern apple grower can put a barrel of apples on the market for \$1.25, and it costs us nearly a dollar for a single box. We have not learned to make use of the culls. There are a great many of our fruit growing sections here in the West that have not a single cannery or drier, or method of any kind for making a profit on the poorer grades of apples. There is an

MYERS SPRAY PUMPS ALL KINDS

Nozzles, Fittings, Etc.

Take off your hat to the Myers!
BEST PUMP ON EARTH

Figure 632

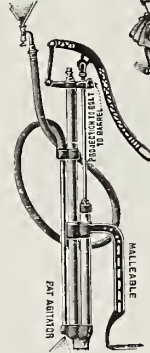


Figure 1490



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"LARCH" FRUIT PACKAGES

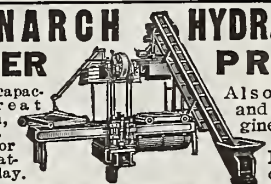
OF ALL KINDS

Apple and Strawberry Our Specialty
Give us a trial

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HOOD RIVER, OREGON

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Proved capacity, great strength, all sizes. Write for FREE catalog today.



Also Gasoline and Steam Engines, Threshers, Saw Mills. Get our prices.

MONARCH MCHY. CO., 640 Hudson Terminal, New York

SOIL Rich black gravelly loam with clay subsoil, very productive with irrigation.

WATER Abundance of fine water over which there never can be litigation.

MARKET Three miles from Spokane's 125,000 hungry people. Easy access to mining, timber, wheat belts of Inland Empire, as well as Eastern markets.

TRANSPORTATION Spokane the largest railroad center west of Mississippi River. Three steam roads, two electric lines through our property.

CLIMATE—Fine

CONVENIENCES Electric light, domestic water, mail delivery, street cars, etc.

Write for particulars to

OPPORTUNITY-VERA LAND CO.

403 Sprague Avenue

Spokane, Washington

Hood River Nurseries

Have for the coming season a very complete line of

Nursery Stock

Newtown and Spitzenberg propagated from selected bearing trees. Make no mistake, but start your orchard right. Plant generation trees. Hood River (Clark Seedling) strawberry plants in quantities to suit

SEND FOR PRICES

RAWSON & STANTON, Hood River, Oregon

A Book About the Country in Oregon and Washington Recently Opened

by the building of



and

Oregon Trunk Ry.

will be mailed on receipt of request. It outlines the resources of the fruit, grain, dairy and garden districts of this country in a conservative manner.

Non-irrigated and irrigated districts are reached by these lines and this book will be interesting to those seeking a new location.



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RABBIT-TIGHT FENCE**

TURN THE RABBITS

PORTLAND, OREGON

The Model Vineyard of the Northwest For Sale

Owing to advancing years, I offer for sale my fruit farm known as the "Schleicher Vineyard," of some 415 acres of hillside land overlooking the Clearwater River, within four miles of Lewiston, Idaho. About 200 acres of this land is adapted to orchard and vineyard, the balance in pasture, a good deal of which would raise alfalfa. There is an ample private supply of water from springs piped all over the place under 200 feet pressure for irrigation, domestic and stock purposes. About 40 acres under high state of cultivation in vineyard, orchard and grape nursery, of which are 15 acres of bearing vineyard planted to choice European grapes which have been awarded first prizes at the fairs of Buffalo, Omaha, St. Louis, Portland and Seattle. This is generally admitted to be the model vineyard of the Northwest. Wine of the Riesling and Sauterne, also Madeira and Tokay types, has been produced equal to the best. Greater freedom from frost damage than the most favored valleys of California. No failure of grape crop in 25 years. Adapted also to culture of apple, pear, cherry, peach, apricot, prunes, all of which have been tried extensively. Culture of English walnuts and European chestnuts highly successful, as evidenced by trees 25 years old bearing nuts of high quality. Besides the ground that is planted there are about 100 acres ready for planting. Part of this land is also adapted to the raising of fine stock or dairying. Half mile from packing house to shipping station of both Northern Pacific Railway and Harriman System, with ten trains daily. This is the choicest acreage in the Lewiston Valley, which is fast becoming the horticultural center of the Northwest. Buildings, outhouses, cellars, equipment and stock, ample and in good condition. For particulars and terms, address

R. SCHLEICHER, Lewiston, Idaho

immense field for the establishment of canneries, driers and factories to manufacture our culls into jellies and jams. And furthermore, is there not a change possible in the pack itself? What about adopting the barrel for all apples to be shipped except the absolutely extra fancy? Let us confine our lithographs and baby ribbons to the perfect A1 apples. We cannot afford to use boxes for our second and third grade apples, but we can use the barrel, and can put the fruit on the market at a reasonable price. In conclusion, then, is not this factor of economy worthy of some consideration? We have made an extensive study of European markets, freight rates, refrigeration and pre-cooling. We have figured to the very last cent how much it will cost to place a box of apples in London upon the opening of the Panama canal, but we have absolutely forgotten the ordinary man. We have forgotten that there are thousands and hundreds of thousands of people all about us, in the West as well as the East, who are willing and anxious to buy our fruit if we will only reduce the price within their reach. Just as soon as this is done the demand will be increased ten fold and the fruit industry will be placed on a good, solid, permanent foundation.



A FORGE ON THE FARM

One of the handiest things any farmer can have is a forge on which he can do all his blacksmithing. Many a trip to town can be saved, when some little repairing is to be done. It needs only a little mechanical common sense for any farmer to be able to do a large share of his own repair work. In connection with the new Hummer grinder, the Luther Grinder Manufacturing Company have arranged an attachment that makes of the machine as fine a little farm forge as can be had anywhere. This additional cost is very slight indeed. They say it is so handy an article that nearly half of the machines they ship to farmers have the forge attachment sent along too. It won't do any hurt to drop them a line, and they will send full information regarding it.

Editor Better Fruit:

I read the whole magazine from cover to cover, ads and all, and preserve each copy. That's how I like "Better Fruit." Yours truly, A. W. Beale, St. Joseph, Missouri.

In Rogue River District, Oregon

110 acres, 3 miles from station; young home orchard and 70 acres under cultivation. \$85.00 per acre.

30 acres, 2 miles from station; 20 in 3-year apples and 10 in 3-year-old pears; sub-irrigated. \$300.00 per acre.

80 acres, easily cleared; fine pear land; 5 1/2 miles from station. \$25.00 per acre. And other bargains. E. P. CHANDLER, Rogue River, Jackson County, Oregon.

Fruit Growing and Bee Keeping

Learn what an ideal combination it makes. "Gleanings in Bee Culture" tells all about it. Six months' trial subscription 25c. 64-page book on Bees and supply catalog free.

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The Hood River Standard Nursery Co.

For Fall of 1912 and Spring of 1913

Leads in quality. Our trees are vigorous, well rooted and TRUE TO NAME. Our trees are free from disease and will pass inspection anywhere.

HOOD RIVER by its scientific apple growing has produced apples of such quality that they command the highest prices and are known in every market of the world. It has specialized on a few varieties and developed them to perfection. From this stock, THE MOST HIGHLY DEVELOPED IN THE WORLD, WE HAVE SELECTED OUR SCIONS AND BUDS.

THE WORLD'S FAMOUS

Spitzenberg and Yellow Newtown in large supply

**Also Winesap, Jonathan, Stayman Winesap, Rome Beauty, Gravenstein
Wagener, Northern Spy, Ortley and Arkansas Black**

A FULL LINE OF STOCK TO SELECT FROM

Special prices to Commercial Planters

Get our price list before placing your order

The Hood River Standard Nursery, Hood River, Oregon

How to Make the Apple A More Valuable Asset

Waldo G. Paine, before the Inland Empire Federation of Commercial Clubs

STANDARDIZATION of Northwest-
ern apples, an effective and
persistent advertising campaign,
organization of responsible local asso-
ciations, construction of frost-proof
storehouses in orchards and central
points, development of adequate trans-
portation and market facilities and
ways and means for proper distribu-
tion of the fruit were discussed by
Waldo G. Paine, second vice-president
and general traffic manager of the
Spokane & Inland Empire Electric
Railway system, at a meeting of the
executive committee of the Inland
Empire Federation of Commercial
Clubs, representing a total membership
of 15,000 in the four Northwestern
States, at Rosalia, Washington, April
24. He said in part: "There never was
a more opportune time, in this age of
unparalleled progress and wonderful
opportunities and tremendous possi-
bilities, for the centralization or con-
centration of effort and endeavor; but
in this, as in every large undertaking,

team work is absolutely and positively
necessary to its growth. In fact the
mental attitude of those interested is
the foundation upon which the material
enlargement of any movement is con-
structed. Thus, then, energetic opti-
mism and intelligent team work must
go hand in hand to vitalize the plan.
Bearing these facts in mind, I desire
to draw attention to the proposition of
organization, which has engaged the
best thoughts of the world's economists
for years. Much has been said and
written regarding co-operative market-
ing operations and so-called central
selling systems. The purpose is two-
fold: First, the elimination of the
expense of actual handling and sales,
and, second, the elimination of com-
petition and unnecessary price cutting
in markets. So far no organization of
this type yet pretends to control more
than a small fraction of the products of
the land. This means that no co-oper-
ative company dominates the field nor
really fixes the prices.

"Here is the situation that confronts
the commercial orchardists of the
Inland Empire, in which, according to
reliable figures, there are today grow-
ing 15,000,000 apple trees. Thirty-five
per cent of these trees is four years
old or over, while the remaining sixty-
five per cent is three years old or under.
Let us say, to be conservative, that only

fifty per cent of the trees now growing
will bear fruit. At four boxes to the
tree, which is a low estimate, we should
have 30,000,000 boxes of fruit from the
7,500,000 trees in 1915. Thirty million
boxes would fill 50,000 cars, making
2,000 trains of 25 cars each, which,
hailed at the rate of 10 trains, or 250
cars a day, would require 200 days
from the time the first train started
until the last had received orders to
pull out. Twenty-five thousand refrig-
erator cars, each making two trips,
would be needed to handle the crop.
All the railroads on the continent could
not supply sufficient cars to handle the
fruit production of the Inland Empire
alone during the picking and packing
season. To build 25,000 new cars would
mean an expense of \$37,500,000, figuring
each car at \$1,500, and several hundred
locomotives would have to be built to
haul them from the orchard districts to
the Eastern and Central market points.

"This condition, with which our
growers will soon come face to face, is

ORCHARD MAN with extensive
nursery experience (Pacific Coast)
wants to connect with a planting
proposition. Address B. M., care
"Better Fruit."

POSITION WANTED

By an educated horticulturist of
energy and ability, with a lifetime
experience in the orchard. L. B.
ZELL, 509 N. 3, Walla Walla, Wash.

Thirty-Four Years' Experience

Growing nursery stock True-to-Name, which won our reputation. We have a complete line of nursery stock from which to choose. Our customers are guaranteed entire satisfaction. As usual we will have a splendid lot of

Apple, Pear, Cherry Peach, Plum and Prune

Also a general assortment of Shade and Ornamental Stock. We will be pleased to figure with prospective planters of commercial pear orchards in Bartlett and Anjou. Write for new descriptive catalog. A postal brings it.

Milton Nursery Company

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SECURITY LADDERS

"NOT A NAIL IN THEM"

The Most Economical to Buy and Use

Security Construction is Rigid and Inspires Confidence

Security Patent Step Joint Makes these Ladders STRONGEST Where Others are Weakest



Ask your Dealer for Security Ladders

Light—Strong—Durable—Save Wages

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Los Angeles, California

a problem of far-reaching effect, for the reason the ramifications of the apple industry extend into all lines of financial, commercial and industrial endeavor. Now is the time to act. By this I do not mean the mere passing of resolutions, but to resolve to act and then act intelligently. We must do several things, chiefly among them being the following: First, organize responsible local associations; second, standardize our apples; third, advertise our orchard products; fourth, build frost-proof local and central store-houses; fifth, provide adequate transportation facilities; sixth, develop our markets and arrange for proper distribution. The first and most important item in the foregoing tentative program is local organization. In every community there are men with the initiative, the enterprise and activity to start things without asking themselves, "Where do we come in?" They can interest the growers of their district and urge that the so-called narrow attitude and all factional differences, if any there are, be substituted with public-spirited harmony and wholesale co-operation. The organization should be complete in every detail. There can be no argument for the present-day need of the standardization of fruit, especially Northwestern apples; but in this, too, we must look beyond the limited horizon of selfish interest and the narrow-gauge view of things in general. Our growers must be ready to consider any proposition which promises a reasonable and logical gain for the industry as a whole. The standard cannot be set too high. Too much stress cannot be put upon the importance of a judicious, effective and persistent campaign to exploit our orchard products. The four national apple shows in Spokane and the displays of our apples at the various land shows in the Central, Western and Eastern States, did much to advertise our products, but it should not end there. We have a commodity worthy of the highest praise.

"Railroads and the commercial organizations have expended many thousands of dollars in exploiting the Northwestern apple and the land upon which it reached its present-day perfection, but more than that is necessary. To reach the every-day consumer the grower must exploit his products in the publications he reads. The right kind of advertising will create the desire, after which it is up to the growers to supply the demand. Little or no attention has ever been given to properly advertising the apple as a commodity, yet there is no one who could set a limit to the possibilities of a consistent and persistent campaign. Think of what would be the effect on the market if consumers were taught by the judicious use of printers' ink that in purchasing apples they are buying rosy cheeks, happy smiles, sparkling eyes and elastic step. As the result of a wise and widespread advertising plan the consumer could be familiarized with the varieties

TARRED ORCHARD YARN

FOR YOUR TREES

Right down to the minute method, for supporting heavily laden branches. Does not interfere with pruning, spraying, cultivating or thinning.

Does not chafe the limbs, when swayed by wind.

Being tarred, does not harbor insects.

Cheaper than props, and branches easily tied.

Sold by all dealers.

Manufactured by

The Portland Cordage Co.
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\$1.00 a Year

will keep you posted on the fruit-growing industry.

Cultivating, Pruning, Irrigating, Spraying, Picking, Packing and Marketing

are subjects frequently and fully discussed by the best authorities in

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A DOLLAR WELL SPENT



Make the Farm Pay

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Complete Home Study Courses in Agriculture, Horticulture, Floriculture, Landscape Gardening, Forestry, Poultry Culture, Farm Accounting and Veterinary Science under Prof. Brooks of the Massachusetts Agricultural College, Prof. Craig of Cornell University, Prof. Bexell of the Oregon Agricultural College and other eminent teachers.

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Dr. Jaeger Underwear

Dr. Deimel Linen Mesh Underwear

Dent's and Fownes' Gloves

Buffum & Pendleton

311 Morrison Street
Portland, Oregon

and the excellent qualities of our Northwestern apples.

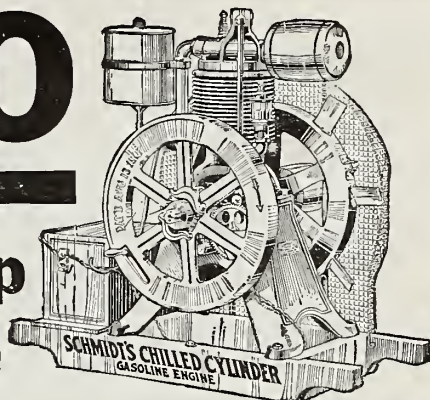
"Apples do not require half as much advertising as breakfast foods, rubber heels and clean-all soaps do, but so far our growers and handlers do not seem to have realized the fact. On the other hand, the citrus growers of California have popularized their wares all over the world at a comparatively small expense. One cent for each box of apples packed in the Inland Empire set aside this year would create a fund of from \$90,000 to \$100,000, with which a continent-wide campaign could be waged next fall and winter and the spring of 1913. This would produce highly beneficial results and give the Northwestern apple its rightful place in the markets of America and beyond the seas. But it must not stop there. The problem of judicious and result-producing advertising is one of the most serious and weighty considerations which confronts the apple growers of America today. It is of as much importance to the industry as it is to any commercial organization or organized business. There is only one way to attract attention to anything worth while, whether to a district, a city or a commodity, and that is through intelligently directed publicity.

"The problem of adequate transportation facilities can be solved partly by the building of frost-proof local and central storehouses. There should be one in every orchard as well as at the shipping point. Spokane should have additional storage facilities for from 5,000 to 8,000 cars of apples, so arranged that the capacity could be doubled if necessary. North Yakima already has accommodations for 3,000 cars and Wenatchee and Walla Walla have some facilities. There also are storehouses in the larger towns in Northern Idaho, Western Montana and Eastern Washington and Oregon, but I do not believe we have in the Inland Empire adequate facilities to properly care for twenty-five per cent of the apple crop. The growers can assist in the matter of transportation facilities by providing storehouses in the various communities, studying the markets and arranging through their associations for a greater and wider and more thorough distribution of their products.

"This brings us to the marketing problem, which should be the constant study of every grower. I think we are agreed that competitive selling causes price cutting and that inadequate market information results in haphazard distribution, and in turn glutts the markets with consigned fruit which cannot be sold at other than the lowest prices, resultant from overstocking the regular channels of trade. There are markets for from four to five times the amount of apples produced in the United States today. The growers in all the states of the Union did not produce one-third as many apples in 1911 (23,000,000 barrels, or 69,000,000 bushels) as in 1896 (69,070,000 barrels, or 197,210,000 bushels), before any of the

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Yes, sir, that's right—you keep this engine for \$7.50, a wonderful gasoline engine offer, an offer without a parallel. We ship you your choice of Schmidt's Chilled Cylinder Gasoline Engines on your simple request without an order or any promise from you. You use the engine 10 entire days, use it all you want to. Then if you don't want it, send it back at our expense. If you do wish to keep it, pay us **only \$7.50 and the rest in the easiest monthly payments. We send you the engine free**, to prove that it is the greatest engine on earth for farm and shop use. It is the only engine with the marvelous, powerful chilled cylinder. The only engine for farm use with a spark retarder. The new type gasoline engine that has revolutionized the gasoline engine industry. The only engine good enough to send out on actual free trial without a cent down in any way. Your choice of many sizes.

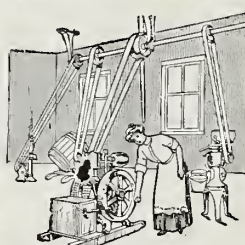
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5 Years Guarantee Schmidt's Chilled Cylinder Gasoline Engine is absolutely guaranteed for 5 years in every piece and part. The biggest bank in Iowa backs our \$1,000 challenge offer.

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Get our big Gasoline Engine catalog right away. Do not delay about this. Find out all about Schmidt's Chilled Cylinder Gasoline Engine before you think of buying. We will also send you free our book "How to Use Power." To all who will write promptly we will send this useful book. It tells you just how to use a gasoline engine on the farm or in the shop. Be sure to send us your name and address to-day.



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The Social Hygiene Society of Portland

Affiliated with THE STATE BOARD OF HEALTH, offers to parents free of charge the following circulars on

SEX HYGIENE

- CIRCULAR No. 1—The Need for Education in Sexual Hygiene.
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- CIRCULAR No. 7—A Plain Talk with Younger Boys (boys 9 to 13).
- CIRCULAR No. 8—A Plain Talk with Older Boys (boys 13 to 18).
- CIRCULAR No. 9—Sex Hygiene for Young Men.
- CIRCULAR No. 10—Sex Hygiene for Young Women.

Order carefully by number and enclose 2-cent stamp for postage

The Society also recommends and offers for sale the following books:

From Youth Into Manhood (for boys 13 to 18), postpaid.....	\$0.55	The Renewal of Life (for parents), postpaid.....	\$1.35
The Young Man's Problem (for young men), postpaid.....	.12	The Boy Problem (for parents), postpaid.....	.12

ADDRESS DEPARTMENT D THE SOCIAL HYGIENE SOCIETY OF PORTLAND, OREGON, 306 Y. M. C. A. BUILDING

Idaho Pine Makes the Best Fruit Boxes

MANUFACTURED BY THE

LEWISTON BOX CO., Lewiston, Idaho

The Nursery That Has Made Good

Is the one that should receive your patronage. Don't waste time by getting your stock from an unknown, untried source. Save worry and time by placing your order with a reliable concern that has made good.

Do you know we put out the broadest guarantee of any reputable firm? Why? Because we want to give you and every other customer full value for money expended.

Have you seen our handsome catalog? It's a beauty. Besides showing our complete line, there is a list of hardy fruits, directions for planting, and a spraying calendar.

Don't take chances. Place your order with the

Yakima Valley Nursery Company

"The Nursery that has Made Good"

More Salesmen Wanted

Toppenish, Washington



Hemingway's Lead Arsenate

This product is of the highest standard of manufacture and has the following points of superiority:

Perfect Physical Condition

i.e., fineness of grain and ease in thinning down in water

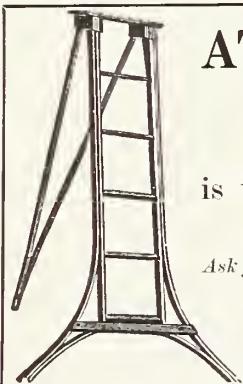
Correct Analysis

i.e., full percentage of Arsenic Oxide (15% guaranteed) and no more than a trace of soluble arsenic, therefore no foliage burning.

WRITE FOR BOOKLET AND PRICES

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Hemingway's London Purple Co., Ltd. 64-66 Water Street
New York City



AT LAST THERE IS A DECENT LADDER BUILT FOR THE FRUIT GROWER

Rock-Elm

is the lightest strong wood in the world, and something that will last for years.

Ask for circular and price delivered to your station.

The Fruit Growers Supply Co.
SPOKANE, WASHINGTON

Orcharding has become a business. It is therefore necessary to cut down expense as much as possible. Here is an invention that will reduce expense greatly.

Its purpose is to replace props entirely, and as the cut shows, it is very simple and practical.

"Hoyt's Tree Supports"

are up out of the way, which makes cultivation, irrigation and picking much easier and faster.



Nothing to haul in and out of the orchard. Once placed in trees are a permanent improvement and branches cannot break.

Glance at the prices and see if they are cheaper than old pole props. Order now, so as to have them ready for this year's crop.

2 or 2½-inch sizes, \$18.50 per 1,000, f.o.b. Los Angeles; 500 for \$9.25; 18 for \$1.00, postpaid.

Send cash with order to

G. W. BASSETT, Ashland, Oregon

commercial orchards in the Northwest came into maturity, yet we hear every little while there is going to be an overproduction of this fruit. We find, too, that prices are hammered at times.

"The solution of these problems is contained in a few words: The proper distribution of fruit to the existing markets and the creation of new markets in this country and abroad. This is the heart of the situation as it affects the prices which the growers receive for their products. The same conditions confront every specialized industry. We have all the essentials necessary to build successful marketing organizations. Various communities have had experience in organizing and conducting local associations. There is a unity of interests that can bring to a successful culmination the union of organized effort. No district is more favored in geographical unity and means of communication and transit than the Inland Empire and the Northwest. Every condition is right and ripe for associations, which are necessary to save hundreds of thousands of dollars wasted annually through the lack of organization and co-operation. The apple growers of the Inland Empire and throughout the Northwest must come to organization and co-operation, which means the application of modern business methods and team work if profits are to result from the apple industry and harmonious work for better conditions is the goal to be reached."

The highest types of apple in the world today are the Hood River Spitzenberg and Yellow Newtown Pippin; the highest type today to Hood River's cosmopolitan people of a life insurance policy is a Policy of the National Life Insurance Company of the United States of America, of Chicago.

These Policies, which hundreds of your neighbors have, make superb Christmas presents, Happy New Year gifts, appropriate wedding presents, choice birthday reminders and unexcelled anniversary tokens.

Write for information to the Agent at Large, Dr. James H. Shults, Hood River, whom most of you know, quote "Better Fruit," and full and satisfactory information will be furnished and hurry orders will receive prompt attention by telegraph and special delivery letters.

Almost the whole world knows of Hood River as a place that produces the best fruits, and all of Hood River Valley should know, and could know, that there is one place in Hood River, under the firm name of R. B. Bragg & Co., where the people can depend on getting most reliable dry goods, clothing, shoes and groceries at the most reasonable prices that are possible. Try it.

THE NATIONAL ASSOCIATION OF SUBSCRIPTION SPECIALISTS desires a member in every town and city in the United States. The Association credentials prove your reliability and establish you as the bona fide publishers' representative in your territory. Only one membership is issued to every 5,000 population. The Association plans secure for you the magazine business of your town or city. Full particulars on request. Address C. W. ROSS, Manager, N. A. S. S., 45 East 12d Street, New York City.

What One State Has Done for The Country

One of the stock arguments against state laws of a restrictive nature is that such laws place the state that passes them at a commercial disadvantage. One state passes a law prohibiting the employment of children of tender age in factories—a humane law; a law that most civilized countries have had on their statute books for a quarter of a century; a law of which all right thinking people see the need. At once a complaint goes up from the manufacturers of that state urging that the law be repealed because since its enactment they have been unable to compete with the manufacturers in the same line of business in neighboring states where child labor is still permitted. Or, it may be, the state passes a law forbidding women to work more than ten hours a day. Again a protest is raised. The argument that a righteous, much needed law will drive business from the state is a powerful one and has been responsible for many of the social and economic ills from which we are suffering. Nevertheless there have been and are states that are willing to make some commercial sacrifices for principle's sake. North Dakota has what is called a "net weight law," requiring all package goods to be plainly labeled with the net weight of the contents—certainly a reasonable law and one to which no honest manufacturer should object. Nevertheless the National Biscuit Company, one of the largest concerns of its kind, preferred to withdraw from the state rather than comply with that law. Possibly the company believed that by the withdrawal of its products—and, more important yet, its advertising—from North Dakota the net weight law would be overthrown. In this instance the manufacturer made a mistake; the law was not overthrown. On the other hand, it has resulted in the building up within the state of North Dakota of large plants where biscuits were made from the North Dakota wheat and sold to the people of North Dakota under truth-telling labels. After about six years of its short-sighted policy the National Biscuit Company, doubtless realizing that it had cut off its nose to spite its face, re-entered the state of North Dakota a few months ago with its products labeled in accordance with the requirements of the state law. Nor is such labeling exclusively for the North Dakota trade. In every state in the Union this company's products now have printed on the carton not only the net weight of the biscuits but also—what is more than the law requires—the number of biscuits in each package. The people of the whole United States, therefore, now know just how much they are getting for their money when they purchase this brand of crackers. According to The Journal of the American Medical Association the state of North Dakota is to be thanked for it.—Exchange.

Fruit Tree Stocks

FOREIGN AND DOMESTIC

ALL GRADES

Pear Seedlings—French (American-Grown and Imported)
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Apple Seedlings—American-Grown and Imported, straight
or branched for grafting or budding

Paradise

Doucine

Cherry Stocks—Mazzard and
Mahaleb

Plum Stocks—St. Julian and
Myroblan

Rose Stocks—Canina, Manetti
and Multiflora

Quince Stocks

We also import large quantities of Ornamental Tree Seedlings,
Shrubs, Roses, Evergreens, Etc.

Submit list for prices, naming amounts, grades, etc.

THE SHENANDOAH NURSERIES

D. S. LAKE, Proprietor

SHENANDOAH, IOWA



Real Estate

Twenty-five years' residence in Hood River. Write for information regarding the Hood River Valley. Literature sent upon request. Address all communications to

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HOOD RIVER, OREGON

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Apples for Export

California, Oregon, Washington, Idaho and Florida fruits. Apples handled in all European markets at private sale. Checks mailed from our New York office same day apples are sold on the other side. We are not agents; **WE ARE SELLERS.** We make a specialty of handling **APPLES, PEARS AND PRUNES** on the New York and foreign markets. Correspondence solicited.

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New Invention for Sharpening Sickles



Sharpens against side face of wheel. Holder gives perfect control and an absolutely perfect and uniform bevel to every tooth. Get your sickle and mower knives sharpened up and ready for work with the

Luther Farm Tool Grinder

It is a wonderful grinder—the only all steel frame grinder made—has shaft drive like an automobile—enclosed bearings—gravity lubrication. Has 30 different attachments for doing all kinds of difficult tool sharpening, also rip saw, jig saw, drill, lathe, forge attachment, etc.

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Luther Tool Grinders are equipped with the rapid Dymo-Grit sharpening wheels—"The wheel for steel"—25 times faster than the grindstone, 10 times more efficient than emery. Will positively not draw temper.

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Send for special 30 days Free Trial Offer and 40-page free book which tells all about this wonderful free machine. Address

LUTHER GRINDER MFG. CO.
1168 Stroth Building Milwaukee, Wis.

A Well Deserved Appointment

Ren H. Rice, manager of the National Apple Show, is said to be slated for appointment as the new industrial secretary of the Spokane Chamber of Commerce. Frank R. Culbertson, chairman of the general committee which will name the industrial secretary, said



Ren H. Rice, Secretary and Manager
of National Apple Show

today: "Mr. Rice's name is being considered. The committee has not yet had a meeting to take up the matter and make the appointment definite or to agree on taking up at present." Mr. Rice is now busily engaged in raising the \$60,000 Greater Spokane fund, out of which the expenses of the new office are to be paid. It is considered probable that as industrial secretary Mr. Rice will also be expected to handle the convention bureau which will also be installed.—Spokane Chronicle.

Will Fight Codling Moth

In order to find out just what is the best time to make the second spray for the control of the codling moth Professor H. F. Wilson of the entomology department of the Oregon Agricultural College will make a tour of Southern Oregon and other points the coming summer. About two weeks after the first calyx spray of the apple trees he plans to consecutively visit Roseburg, Medford, Ashland, Portland, Hood River, Union, Ontario, and then Astoria and Coos Bay.

Editor Better Fruit:

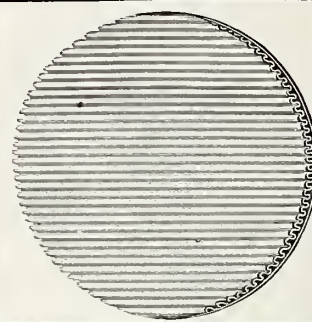
I am receiving your publication regularly and feel that it is the best fruit magazine published anywhere, and I have recommended same to my friends. Yours very truly, A. L. Searles, Madison, Wisconsin.

Editor Better Fruit:

"Better Fruit" is in a class by itself and I do not want to miss a single number. Very truly yours, F. S. Holmes, Blackburgh, Virginia.

Appco Shipsafe

Squeeze Proof Barrel Caps



A new and better corrugated cap that takes up the squeeze without bruising the fruit. SAMPLES SENT on request.

Single Faced, - - - Per 1,000, \$ 7.00
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Also Box Lining Cut to Size.

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Commission Extraordinary

The "Commission Extraordinary to Europe," which is composed of Hon. John Hayes Hammond, representative of the president of the United States; Brigadier-General Clarence R. Edwards, representing the army; Rear-Admiral Sidney A. Staunton, representing the navy; Messrs. R. B. Hale, vice-president of the exposition, and William T. Session, vice-president of the San Francisco Chamber of Commerce, will leave for Washington to confer with the state department officials, and also prepare for their visit to European courts. The commission is to sail from New York City on the Cunard liner "Mauretania," and will go direct to London. The itinerary of the commission has been arranged by the state department and calls for a visit to the capitals of twenty-four countries in Europe. Theodore Hardee is the executive officer of the commission and Archibald C. Emery secretary.

San Francisco's Coming Fair

Rules and regulations for the guidance of foreign and domestic participants in the Panama-Pacific International Exposition have been prepared by Director-in-Chief Frederick J. V. Skiff and are now being distributed by the exposition. These rules specify that the exposition is to open on February 20, 1915, and close on December 4, 1915. They also specify that 625 acres will be devoted to the exposition and that it will have a frontage upon the bay at the Golden Gate of 15,000 feet. The main exhibition palaces will be open to visitors at nine o'clock each day and will be closed at the hour of sunset, except the Art Palace, which may be open after sunset at stated times. All application for sites of buildings and for outdoor exhibits must be filed on or before June 1, 1914.

Pacific Coast to Be Popular

George L. Hutchin of the Portland Rose Festival, who is president of the Festival Associations of the Pacific Coast, reported to the delegates from the various festival organizations at their meeting last Wednesday that the great transcontinental railroads are going to feature the Pacific Coast as the "Playground of the world and the show place of America." The committee, at its meeting, adopted by-laws for conducting the organization. It is planned to advertise every festival event, beginning with Pasadena's Tournament of Roses on the first of the year and closing with the Christmas Carols in San Francisco. The Middle West and Eastern papers heartily approve the objects of the organization and are giving it a great deal of space. The Panama-Pacific International Exposition of 1915 is lending its support to this splendid plan of advertising the West.

Editor Better Fruit:

I wish to compliment you on the excellence of the last issue of "Better Fruit." Respectfully, J. C. Goodner, Toppenish, Washington.



FROM ITS VERY CONCEPTION TO
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Apollo Player Piano

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The Genius of its Inventor Melville Clark

COMBINED with persistent and costly experiments have made the Apollo of today so individual as to be in a class by itself. If you are unable to hear an Apollo in our ware rooms, may we send a booklet which illustrates and explains the following features that are absolutely essential to the correct production of piano music. The solo theme, the downward touch, the metronome motor, all of which are exclusive to the Apollo.

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COMMERCIAL ORCHARDS All in Bearing, and in some of the Best Proven Fruit Sections of Virginia

- (1) 250 acres mountain land. Over 2,500 apple trees, one-half beginning to bear. Some of the land is rough, but the trees are well grown and very thrifty. 4½ miles down grade to station. Price \$10,750.
A GREAT BARGAIN.
- (2) 160 acres at foot of Blue Ridge. About 5,000 trees, 1,200 apple 18 years old, balance just being planted; 1910 crop 1,000 barrels. 3½ miles over fine road from station. Price \$20,000.
- (3) In select fruit region close to progressive town, 160 acres practically all planted in fruit. About 6,300 apple trees five years old, 200 six years old and 1,000 one year old; 15,000 peach trees five years old; fine property, worthy of immediate investigation, purchasable at investment figure. Price \$60,000.
- (4) About 7,000 apple trees, all in bearing and from 7 to 17 years old. Rich land, one-third in orchard, balance mostly blue grass sod. Owner reports 1910 apple crop brought \$9,000 net. Distance to station 1½ miles. Price \$65,000.
- (5) Contains nearly 15,000 apple trees 11 to 15 years old, within one mile of two competing railroads. Elevated land, good air drainage, within five miles of large city. Cheap property. A few good crops should pay for it. Can be bought for about \$120,000.

Other Fine Orchards. Write for List.

H. W. HILLEARY & COMPANY, 729-30 Southern Building, Washington, D. C.

What Arrangements Are You Making? for Marketing Your Crop This Fall?

Every shipper should carefully consider for himself the best marketing methods. Very small shippers undoubtedly should combine in local associations. The question as to whether these local associations should combine in district associations and in turn, whether the district associations should combine in one great selling agency is one of importance, and that each factor must decide for itself.

The question of getting the greatest net results depends, in the final analysis, in having correct credit information as to the business methods and financial responsibility of the distant dealers to whom your products may be sold. This is true whether you ship individually or through an association, or through a district association, or through one central selling agency. CREDIT INFORMATION IS A FUNDAMENTAL NECESSITY.

It is conceded, we think, that the Produce Reporter Company's Credit Book is the best credit authority for the use of shippers of perishables. Let this point be accepted then as conceded, THAT YOU NEED THE CREDIT BOOK.

With the best of care differences will arise, shipments will be rejected, and it is only wise business to provide for the handling of these matters when they do occur. The Adjusting Department of our Organization must be conceded disinterested. This is not a selling agency. We do not handle our Members' regular shipments unless they get into trouble. We do not make any sales for our shippers or for ourselves, unless the goods are in trouble. This gives us distinct advantage of impartiality in arriving at facts that cannot be had by any other system. These facts and the conclusions as to the business policies of the parties involved, are reported to the entire Membership, and enter largely into the ratings assigned the parties whose policies are questioned. The system, therefore, of not only adjusting but reporting is peculiarly adapted to your requirements and warrants your further investigation with the idea of taking a Membership.

Please let us hear what you will have to ship, approximately how many cars, and we will explain to you in detail just how it will make or save you money to join us, no matter what selling arrangements you may make.

Produce Reporter Company, Ogden Building, Chicago

Berries, Chickens and Bees Profitable

L. Y. Williams in the Ranch

NOW is the time to begin. Berries, chickens and bees will return more money per acre than anything else. The same ground can be used, and each will work to the advantage of the other. In planting berries, judgment must be used so the crop will ripen in succession, the bearing season lasting from June 15 until October 15. Otherwise it would require too much help. It does not require strength or college education to work at any of the things mentioned to make them profitable. All between 15 and 75 years can profitably employ themselves, either in the cultivation or picking; it requires judgment and system.

Any land that will grow and mature corn will grow berries; cultivate them often, giving them the same care you do garden vegetables, and don't forget plenty of fertility; berries will stand mulching. Begin the season with strawberries; the Marshall seems to be the best for shipping and canning, being firm and not mashing when canned. Clark's seedling does well on the hill, also the Magoon; plant them in rows four feet apart, setting plants eighteen inches in the row. Next in season, the raspberry. There is only one kind recommended by nearly all nurseries and canneries, the Cuthbert; plant in rows seven feet apart, setting plants three feet apart in the row. Let them spread in the rows, leaving the canes far enough apart to admit the hoe between them in cultivation; do not cut or break the tops out of the new canes. The best method that I have tried is to set posts twenty-five feet apart in the rows, put on a cross arm two feet long, put on a No. 14 galvanized wire, stapling it to ends of cross arms, then

divide the bearing canes, bending them over, tying the tops to the wires on either side. This will permit the new canes to grow up in the center of the rows, leaving the bearing canes on the outside, easy of access in picking, without disturbing the new growth.

The next in succession are the Logan and Phenomenal berries; both are money makers and good berries. I think the Phenomenal is the better berry for table use, being firmer and

sweeter, but not so well known in the market, but I have not found them so heavy in producing. A berry orchard would not be complete without both. Plant them in rows seven feet apart twelve feet in the row; set a post every rod, string three wires, beginning two and one-half feet from the ground, putting the wires eighteen inches apart. In the spring of the year string the new vines on and around these wires. This is what we call putting them up in fan shape and leaves them easy to pick; keep the young growth strung underneath on the ground, using a small stake to keep them in place to prevent



COULD YOU USE A GOOD SPRAYING CALENDAR?

We have just had a small circular printed which contains valuable information on when to spray, what to use, what to spray for, etc., as recommended by the Washington Experiment Station at Pullman, Washington. If you grow nothing more than a few berries in the back yard, you need this bulletin. Just drop up a card, and a copy will be mailed you free.

If you are in the market for anything in the nursery line, and want good, clean, thrifty, guaranteed stock, just mention it to us, and we will be glad to go into the matter with you. We have the finest block of all the staple varieties to be found in the West.

TOPPENISH NURSERY COMPANY TOPPENISH, WASHINGTON

*Located in the heart of the
famous Yakima Valley*

We need a few more live hustlers to represent us in good territory. Let us explain our proposition.



Easier and Quicker to Wash

says C. C. Ross, Goldendale, Washington, of the

SIMPLEX SEPARATOR

"I have used the Improved Simplex Separator No. 7 since September, 1911, and am well pleased with its light running and clean skimming. It is easier and quicker to wash, making it more sanitary than any machine I have ever used."

Cleanliness is the keynote of good milk and cream. A separator must be so built that there is no chance for dirt to accumulate in corners where it is hard to get at and where you don't know of its presence.

That's a mighty important point to be considered when you are investigating separators. It is a feature of the SIMPLEX. It will pay you to buy the clean, sanitary SIMPLEX. Our latest illustrated catalog gives all the details and prices. Write today for Catalog S 28.



Monroe & Crisell

145 Front Street, Portland, Oregon



the pickers from stepping on the vines. After the berry season is over cut out the old vines. No disease has yet appeared that materially injures either of these two berries. Propagate your own roots by burying the ends of the new vines any time in the month of August. The picking season lasts about six weeks.

The next in season is the bush blackberry. The Snyder is the favorite, but owing to a fungus growth that is liable to injure them just as the berry ripens the berry growers are looking for something to take its place. We need a good blackberry to fill in the season before the evergreen ripens. I sprayed with sulphur and lime last year and used lime freely in sprinkling the ground, the fungus appeared very little and did not injure the crop. If I can keep it off this year I am going to plant the Snyder in preference to any other bush variety. Plant the bush blackberry in rows seven feet apart, setting plants four feet apart in the rows; wire and handle the same as the red raspberry, keep the limbs trimmed off, growing a nice straight cane.

The next in succession is the Oregon evergreen blackberry. Plant them in rows seven feet apart, eighteen feet apart in the rows, setting the first vine at the end of the first row; in the next row nine feet from the end of the row, so they will not be opposite each other; this will give the roots more nourishment. There are several methods of handling them. The main object is to enable the picker to get at the berry. I set my posts twenty-four feet apart, put on a cross arm two feet long three feet from the ground; string three wires, one on each end of the arm, one on top of the post; grow about six good vines to each hill, string two each way on each wire. This allows an open space of two feet for bearing shoots to hang in, so they are very easy to pick. I grow all the new vines on the ground, keeping them strung along the row, holding them in place with a small stake. Keep all laterals trimmed off so you may get length and size to the main vine. They will continue bearing until killed by frost. After bearing cut out all but the new vines, pruning as you would a grape vine, leaving only the main vine. You can put them on the wires as soon as through bearing, as there is no danger of winter kill. The Atlas is an evergreen berry similar to the Oregon and handled in the same manner; considered a good shipper and canner. The Australia Himalaya is an evergreen blackberry, three weeks earlier than the Oregon; continues bearing until killed by frost. The California growers consider this the best they have, growing from eight to ten tons to the acre. The vines grow vig-

Hood River Grown Nursery Stock for Season 1911-12

Standard Varieties

Prices Right and Stock First Class

C. D. THOMPSON, Hood River, Oregon

Pearson Nails

(CEMENT COATED)

A TOWER OF STRENGTH

Needle Pointed

Large Heads

Drive Easier

Hold Better



WE MAKE 200 DIFFERENT SIZES.
SUITABLE FOR EVERY PURPOSE

Don't Split Shook

Go Farther

Cost Less

When you know what is BEST, ask for it BY NAME. Insist on PEARSON'S.
All reliable dealers sell them.

J. C. PEARSON COMPANY

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Smith's Self-Feed Nail Stripper

(For Hand Nailers)

Used by Expert Box Makers

Handles all size nails
2d to 10d

URNS OUT BOXES FASTER

Order Sample Now

Price \$10.00

DELIVERED

Liberal Trade Discount
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Smith's "Security Paper Holder"

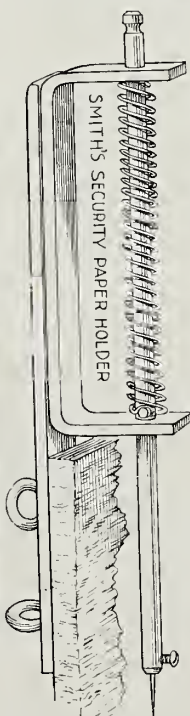
All packers realize the enormous waste of paper occasioned in the wrapping of fruits by the non-use of paper holders.
We guarantee this Holder will save its price in time and paper.

MOST CONVENIENT
Automatic and Non-Breakable

Price \$1.00 each, delivered at any express office in the United States. (Liberal discount to the trade.)

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Wholesale Fruits and Produce

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We have modern cold storage facilities essential for the handling of your products

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PROMPT CASH RETURNS

THE OLD RELIABLE Albany Nurseries

Received highest award for display of apple trees at the big California Apple Show at Watsonville.

The above speaks for us.

For good grade of nursery stock and right prices address

The Albany Nurseries
(INCORPORATED)
ALBANY, OREGON

Salesmen wanted. Easy to sell our trees.

Vineland Nurseries Company

A Reputation to Sustain

Clarkston, Washington

PROPAGATORS OF

Reliable Nursery Stock

All stock budded from bearing trees, fruit and ornamental

LINDSAY & CO. Ltd. Wholesale Fruits

HELENA, MONTANA

Established in Helena a Quarter Century

Branch houses: Great Falls, Missoula and Billings, Montana

orous in this climate and I will be able to tell you about the berries after this year. Plant and handle the vines same as the evergreen. There are several other berries that can be profitably grown—the Mammoth blackberry and Lucretia dewberry for table use.

The above varieties will give continuous picking for the berry season, June 15 to October 15. The average family will not be able to pick and care for more than four acres. After the first year you can run one hundred chickens to the acre without injury to the berries. It affords shade and shelter for the chickens, protection from the hawks that often bother, good dusting beds and the chickens will forage half their living. I allowed my chickens to run in my field the entire season and could not see that they injured the berries. Select a good laying strain of White Leghorns and give them a trial.

All the berry bloom is a honey producer. You can keep from two to four hives of bees to each acre of berries. If you do not like to take care of bees it would be easy to club in and have one man care for a whole neighborhood. Get good standard made hives with loose sections, put on your supers in the early spring and your bees will take care of themselves; anyone can hive the new swarms. You need the bees to mix the pollen on the blossoms to assure a good crop. The honey commands good price and is clear gain.

Hood River Shipments

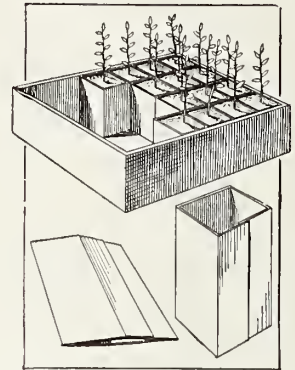
Out of 200 hundred cars of apples shipped from here last year by the Applegrowers' Union but one of them was sent on consignment. This car, which was sent to an Ohio city, was sent with a virtual guarantee that the consignee would secure the f.o.b. Hood River price. Out of a total quantity of 147,000 boxes of apples and pears handled by the union 141,500 were sold f.o.b., while but 5,500 boxes were sent out on consignment, most of them to Portland. During the past season 68 cars of apples were shipped to Steinhart & Kelly of New York. One hundred and thirty-two cars were shipped to sixty-three different dealers in thirty-one different cities of the United States and to four different cities in foreign countries, covering seventeen different states of the Union and three foreign countries.—Portland Oregonian.

American Peaches for England

My article in the Daily Consular and Trade Reports for November 8, 1911, called attention to the inferiority in packing peaches received in England from the State of Washington to those from Ontario. Of additional interest is the recent heavy shipment of refrigerated peaches from South Africa to English markets. Although transported about 6,000 miles they are placed on sale in attractive and fine flavored condition.

Not only have peaches been thus sent by the thousands of cases, but Cape

The Grant Planting Pot



The Grant Planting Pot is conceded by everyone who has seen it to be the ideal pot for the propagating of eucalyptus, conifers, flowers and garden truck.

The Nurserymen Say: Its advantages over all other makes of pots are many, economy in space, ease of handling and low cost price make it the ideal pot for nursery practice.

The Market Gardener Says: That for the purpose of raising early tomatoes, cucumbers, melons, squashes, cantaloupes, etc., for the market, the Grant Pot will enable the market gardener to place such produce on the market at least two weeks earlier than the man who does not use the pots.

O. W. HARRIS

MANUFACTURER

Redlands, California

BUTCHERS' Lime-Sulphur Solution

AND

BUTCHERS' Neutral Lead Arsenate

Both made
in the Pacific Northwest
for Northwest Growers

"Absolutely Standard"

Write Us for Prices

OREGON ARSENICAL SPRAY CO.
CLACKAMAS, OREGON

plums and choice pears come packed in the same way. An empty South African packing case, with the packing in nested form, is forwarded (and will be loaned to interested firms by the Bureau of Manufactures). Wholesale dealers here say that if the choice American fruit is sent in like excellent condition of quality and pack it would be sure to find a good market and bring profitable returns. This should especially interest the peach growers of the Atlantic States. If the growers of Early Alexander peaches at Stellenbosch, Cape Colony, can pack twenty-eight fruit to the case at that distant point and sell them at a profit in England it is apparent that horticulturists in the United States can do as well.—Daily Consular and Trade Reports.

Vigilance Is Necessary

One should, of course, select his trees with regard to their natural growth tendencies, i. e., if the space to be occupied requires a tall, stately tree, one should not select a tree which naturally assumes a short, bushy habit. In other words, we should understand in planting the form to which the tree most readily lends itself. Then we should watch the growth, especially when the young shoots are starting, and insist that only those giving promise of doing what we desire are allowed to grow. These shoots will then be smooth and vigorous, and under such management the tree will take on that natural beauty of form which we so highly prize but so seldom see. If the tree is allowed to waste its energy, often for years, in growing branches where they are not needed and which must be cut off when larger, not only injuring the tree more than if removed when young but also deferring the time when it may be made to fill the space and assume the form desired.—C. H. Shattuck, Professor of Forestry U. of I.

Successful Lecture Tour

Professor W. S. Thornber of the Lewiston-Clarkston School of Horticulture has returned from a visit to points in Minnesota, Illinois and Michigan, and reports a keen interest in the horticultural development in the Northwest. Professor Thornber delivered lectures at eight points, and it is quite probable a number of Minnesota and Michigan students will come to Lewiston this summer to work in the Lewiston orchards and study horticulture under him. Requests have already been received for a more extensive tour next year, and it is probable some arrangement will be made which will allow Professor Thornber to give more time to the Eastern work.

Editor Better Fruit:

I am much pleased with your journal and the amount of information which it contains about the fruit industry throughout the country reflects great credit upon the editor. Yours truly, A. E. Pretty, Dawson, Yukon Territory.

Editor Better Fruit:

Could not get along without "Better Fruit." Yours truly, Gilbert E. Brinton, Shoshone, Idaho.



PORTLAND

BIDS YOU TO HER

ROSE FESTIVAL June 10-15

Tickets will be on sale from all Stations on the

O-W. R. & N.

June 9, 10, 11, 12, 13, 14, 1912

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The Care and Management of Orchards

Continued from page 19

ing the fruit is taken to the packing house, where it is well graded and very thoroughly cleansed and sterilized by steam; it is then packed according to size in boxes for the market. At the present time commercial prune orchards are paying on an average \$100 per acre net. Many of them are doing a great deal better than this, \$200, and often \$300, being realized. When one considers that there is much less work in handling prunes than an equal area of apples, and that the world's markets are demanding more and more of our delicious product, the industry certainly has a very bright future.

In no part of the United States are cherries grown to so high a degree of perfection as in the State of Oregon. Their size and deliciousness have given them a world wide reputation. In Eastern Oregon, in such regions as The Dalles, Cove, etc., cherries are grown largely for shipping purposes, while in Western Oregon, and in the Willamette Valley especially, they are grown for both shipping and canning. Thousands of acres of fine cherry lands are lying idle. The leading commercial varieties are Royal Ann, Lambert and Bing, the Royal Ann being the standard canning cherry and the Lambert and Bing the shipping varieties. Cherries should never be placed on soil that is heavy or waterlogged, or, in short, should never

suffer from wet feet. They do well on the lighter loams and demand good drainage. Many of the rolling hill lands, such as one finds in Western Oregon, are admirably adapted to this fruit. They also flourish on some of the well drained sand and silt loams along the rivers. They are large growing trees, and will need at least thirty-five feet when reaching their mature size. They should be given very good spring cultivation, although in many localities it would be very desirable not to give spring preparation so early as to cause the sap to rise before the permanent spring weather. The ground should be thoroughly prepared and frequent cultivations follow until mid-summer. Cherries grow especially well in lawns, and it may be that at some time the most successful cherry culture will be practiced where cherries are placed in the sod or some growing crop and irrigation water provided. There seems to be a notion prevalent that cherries should not be cultivated or pruned. This is an erroneous opinion and is not based upon facts. While it is true that gummosis kills off quite a large number of cherry trees, especially those having light flesh, nevertheless I am convinced that more large cherry trees die from neglect than from any other cause. There is a varied market for the output. They can be packed and shipped east, canned,

dried and pickled for Maraschino cherries. More attention should be given to this industry. Pre-cooling plants should be established for shipping points. The industry offers an attractive investment. The production at times is extremely heavy, the yield reaching as high as from 500 to 800 pounds of fruit on a single tree. One should fairly expect to net from \$100 to \$200 per acre on cherries, although undoubtedly at times much better figures are realized, such as \$600 to \$700 per acre.

Oregon has one of the largest pear areas to be found in any state of the Union. At the present time this industry is largely confined to the Rogue River Valley, but the industry is still in its infancy even in the Rogue River Valley. There are large areas of land

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in that valley and in the Umpqua and Willamette Valleys that are especially adapted for this class of fruit. Pears will often grow on heavier soils than apples, though they respond handsomely when placed on deep, well drained rich soils. Varieties like Bartlett have a wide range of adaptability, growing on heavy adobe soils on the one hand and on the lighter soils on the other. Winter Nelis should be planted only on the richest soils. Pears should be planted about twenty-five feet apart and be given common orchard cultivation, as indicated in this article on tillage, cover crops, etc. After the trees come into bearing be cautious about over stimulating the trees by furnishing too much nitrogen, or practicing too severe pruning or too much cultivation, since such practices encourage the growth of coarse grained, sappy wood, and such wood succumbs to blight attack very readily. It has been demonstrated in Western and Southern Oregon that when blight is handled carefully and according to our best knowledge of the subject it can be controlled. Climatic conditions are such that blight does not develop as rapidly as it does in some of the warmer heavily irrigated districts. There is a splendid market for pears, varieties like the Bartlett coming into fairly good bearing about the fifth year, though the Winter Nelis and Comice are much slower to come into bearing. Profits do, and probably will for the next twenty years, exceed those of apple culture. Oregon pears are not only known all over the United States, but are being sent to European markets, and wherever they are entered are receiving the highest market prices.

The peach industry in Oregon is still in its infancy. Considerable area adapted to this crop is found at The Dalles, and in Southern Oregon at such points as Merlin and Ashland; also the sandy silt loams found along the banks of the Willamette River and its tributaries. These latter locations are famous for their large sure crop productions. One of our principal growers claims never to have had an absolute loss of fruit in twenty-nine years. Others claim no failure in fifteen years. While at times the local markets might be overstocked, as was true the past summer owing to forest fires that interfered with the Eastern shipments, nevertheless there is a good investment to be found in peach growing. They will have to be grown in carload lots and shipped by means of refrigeration. From Ashland peaches have been sent in splendid condition to many Missouri River points. The industry pays handsome dividends, many local orchards claiming a very high average; one should be reasonably expected to net from \$100 to \$200 year in and year out. Many of our growers are doing a great deal better than this.

The grape culture has not as yet been very highly developed in Oregon; this industry should receive much more attention. There are two sections in the state that are especially adapted for

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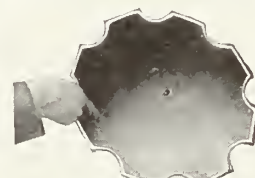
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There is as much difference in the quality of the material used in the blades of disk harrows as there is in pocket knives. Some knives are made to sell at ten cents and others at a dollar. Many disk blades belong to the ten cent pocket knife class, but are worked off on buffers with the rest of the machine at the same price for which the best are sold. Consequently, the farmer cannot be guided by price.

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50-GALLON BARREL
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the production of the Vinifera, or European grape, as it is commonly called; near The Dalles and in parts of Southern Oregon, in such regions as the Rogue River Valley. The best areas are found principally on red hill lands that are provided with good air and soil drainage, have a warm, sunny exposure and are out of the fog and frost belt. Such grapes as Tokay, Muscat, Thompson Seedling, etc., grow to the highest degree of perfection, possess splendid quality and are unexcelled by any grapes the writer has ever tasted. There is a large demand for the product and much more attention should be given to this industry. These lands can also grow the American or table grapes. Much more attention should be given to this product, as we are steadily importing grapes from Eastern points. The Umpqua Valley offers a good field for early table or American grapes like the Worden, Concord, Delaware, Niagara and Breighton. These varieties also succeed well in the Willamette Valley on the silt loams along the rivers and on the sunny, rich hill lands when such lands are not exposed to cold winds. Grapes should be given similar preparation and tillage as stated in this article. The vines are planted in rows about five to six feet apart and the plants from six to eight feet apart in the row, according to the system of pruning. The renewal systems of pruning, in which bearing wood is cut away each year and new bearing wood produced, are the better. Part of the canes should be removed. A strong vine can stand four canes, while some of the weaker growing sorts should have but two canes. At times it is best to limit the number of bunches the vine is allowed to produce and throw greater vitality into the remaining bunches. Grapes must be given exceedingly good care the first three years and not be allowed to bear during that period, so that more vitality may be thrown into the growing vines. They will need severe cutting back the first few years, and when pruned upright each will produce arms for fruiting. European varieties are usually grown on stumps, although sometimes they are placed on wires, while the American varieties are always grown according to the latter method.

Not enough attention is being given in Oregon to the home orchard. While the starting and maintaining of an orchard requires much care and work, and while it is thought by some that it will be better and cheaper to buy the supply of fruit, yet no farm home is complete without an orchard and garden, and probably no family in a rural community will have a desirable amount of fruit unless they grow it, to

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a large extent themselves. Many of our farmers have been making this mistake—they have tried to maintain too large orchards. An average orchard will, with proper care, produce enough fruit for ten families instead of one. The remedy will be to use less trees, and in the majority of cases to grow more varieties. The aim should be to furnish a supply of fruit the year around. It will not be necessary to devote an entire tree to a single variety, for in many cases four or five varieties can be grown on the same tree. The dwarf fruit may offer a partial solution of the problem. A small orchard containing just enough trees and varieties to keep the family and give a supply throughout the season will be much more appreciated, will be easier to care for and will be much more desirable than the average farmer's orchard. In many cases I would advise farmers to plant a new orchard, and after these come into bearing to discard the old orchards, which are often in such condition that it is impossible to put them in good shape. Where the farmer cannot practice cultivation of his orchard he could allow chickens to run through it, and even after the trees became mature and there is no danger of injury hogs could be kept in the orchards. They will work the ground into good shape, and it will be much better than no cultivation at all. Some spraying will be necessary, not so much as with many commercial orchards, however. The aim should be to keep down the majority of the prevalent diseases and insect pests, such as the codling moth, scale, anthracnose and blight. On the average farmer's orchard a good double action hand sprayer will suffice. With a little care splendid results will be realized.

Notes on pollination, in book form, have been published from time to time from this station. The principal advice that we would give at present is not to plant varieties in large square blocks. Many of our commercial varieties of apples are evidently sterile, and we find that even some fertile varieties like the Yellow Newtown seem to be improved by crossing. Where two or three varieties are being grown we would recommend that such varieties be planted in oblong blocks, containing from two to six rows each. Where one wishes to plant a single variety that is to be pollenized every fifth tree in every third row would be ample. Where varieties bloom at the same time fair results can generally be obtained by planting them together. The Spitzenberg and Yellow Newtown inter-pollenate nicely; the Jonathan also goes well with such varieties. The Yellow Newtown is pollenized very nicely by the Ortley or Grimes Golden, and especially well by the White Winter Pearmain. This latter variety has so far proved to be a splendid pollenizer upon every variety tried. The Ben Davis, on the other hand, has proved at times to be rather poor with most varieties, being somewhat weak in



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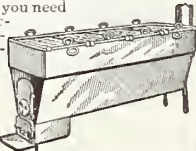
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vitality. While many of our varieties of pears are self-fertile in Oregon, nevertheless practically all are much improved by crossing, and such varieties as Comice, which are absolutely sterile, must be crossed with other pears if good crops are to be realized. The Bartlett and d'Anjou intercrop very nicely, also Winter Nelis and Comice. Howell and Winter Nelis seem to go well with any varieties that bloom at the same time. We would not recommend the interplanting of the Bartlett and Bosc, as the crossing of the Bartlett by the Bosc has given us unsatisfactory results.

While winter killing is not generally experienced in the Northwest, nevertheless the last three years we have had a great deal more of this trouble than we desire. Winter killing takes many forms, and the department of horticulture and botany of this station are now investigating this condition. The so-called condition may be due at times to true winter killing, or it may perhaps be attributed to other causes. The difficulty seems to be very abundant on young trees that are over cultivated, especially in the fall of the year, and are not allowed to go into dormancy early. It is found quite abundantly in orchards that are on poorly drained soils and sub-soils that are supplied with streams of cold seepage water. It occurs at times east of the Cascade, where dry freezing takes place, or during severe cold weather when the ground is bare and contains little moisture. This is especially fatal to young trees. Forms of it will also be caused at times by pruning trees that are frozen, resulting, in many cases, in considerable die-back. It takes many forms. It may show itself in the complete killing of the tree to the ground line; at times a freezing to the snow line; at other times a certain percentage of buds are killed; again there is a discoloration under the bark, while often only certain branches of the tree die. Often the wood is darkened and weakened so that large branches, when heavily laden with fruit, break off. The entire effect of winter killing is not always shown immediately; some trees recover the first year, others are two or three years in recovering, and in some cases even succumb, and at time there is considerable breaking of branches, probably due to former freezes.

Treatment—First be sure that all fruit trees are placed on properly drained soil and watch out especially for seepage water. With young orchards intensive cultivation should cease by the first or middle of August and the trees allowed to harden and go into dormancy. The amount of pruning that injured trees should receive is a question to be determined by experimenting. With very young trees we would advise leaving them alone. With trees from four to five years and in heavy bearing, often heavy spring pruning may be desirable. Where trunks are split or merely a crack indicated, I would seal it over immediately with the solution of grafting wax. Where split-

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Bread

ting has occurred to such an extent that wide cracks are formed, the wounds should be cut down to the live tissue with a sharp knife, sterilized and filled with grafting wax.

While most of our fruit districts are fortunate in being free from killing frosts, some localities at times suffer from frost injury. This injury is principally in the springtime at blooming or soon afterward. The damage at times means a total loss of the crop, while at other times it results in merely a disfigurement of the fruit, a consequent injury to its sale value. One of the best ways to fight frosts is to choose lands that have good air drainage. Such frosts are experienced more in lower elevations, pockets, draws, etc. With good air circulation, under ordinary conditions in our Oregon fruit districts, very little damage will ever be experienced from frosts. Frost damage occurs principally on clear, cool nights, especially when the atmosphere is dry and the radiation of the heat from the earth's surface is very rapid. The appearance of frost may be foretold by means of an instrument known as the sling psychrometer. This consists of two thermometers, that have been thoroughly tested, fastened on a board. On one of these thermometers a damp cloth or a little damp cotton is placed. The instrument is used in this way: The handle should be fastened to a board upon which the thermometers are fastened so that the instrument can be rapidly swung in the air. Moisten the cloth, whirl the apparatus rapidly and read the thermometer immediately after whirling. Unless the air be perfectly saturated with moisture the wet bulb will always show a lower temperature than the dry bulb. Subtract the degrees of the wet bulb from those of the dry bulb and the difference

DEW-POINT TABLE COPIED FROM BAILEY'S "PRINCIPLES OF FRUIT GROWING"

Difference of Reading of Dry and Wet Bulbs	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°
1.....	11	16	22	27	32	38	43	48	53	58	63	69
2.....	6	12	18	24	30	35	41	46	52	57	62	67
3.....	..	7	14	21	27	33	39	44	50	55	60	66
4.....	..	1	10	17	24	30	36	42	48	53	59	64
5.....	4	13	20	27	33	40	46	51	57	62
6.....	7	16	24	30	37	43	49	55	61
7.....	1	11	20	27	34	41	47	53	59
8.....	5	16	24	31	39	45	51	57
9.....	11	20	28	36	43	49	55
10.....	4	16	25	33	40	47	53
11.....	11	21	30	38	45	51
12.....	4	17	27	35	42	49
13.....	11	23	32	40	47
14.....	5	18	28	37	45
15.....	12	24	34	42

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will show the degree of cold produced by evaporation. We obtain in this way what is known as the "dew-point," and whenever the dew-point and temperature register below 32 degree there will be frost. The way to use the dew-point table is as follows: Suppose for example that we swing the psychrometer several times until the mercury has ceased to drop in the wet bulb; the dry bulb reads 50 degrees and the wet bulb 40 degrees. This gives a difference of 10 degrees. Turn to your dew-point table, follow down to No. 10 and then across to the right until you come under the 50 degrees, which was the

temperature of the dry bulb. You will note 25 is the result. The probabilities are that the temperature will fall down to 25 before morning. You then know that it is reasonably sure that there will be killing frosts and means can be taken for protection.

Considerable work has been done in frost fighting, but there is still a great

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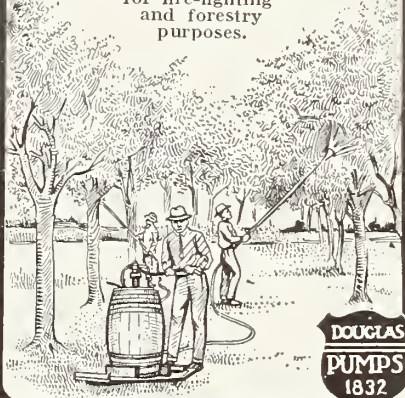
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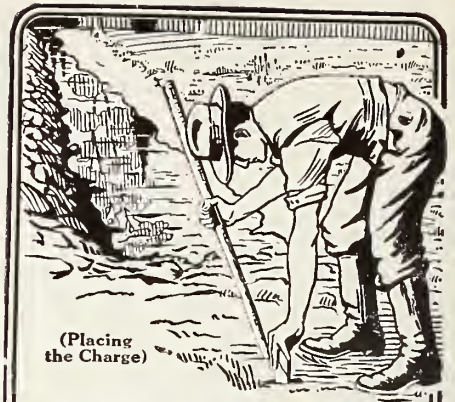
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field for investigation, as the majority of this work has not been done carefully enough and proper checks kept to find out the real limits of smudging or heating. Undoubtedly the temperature can be raised, but how much and under what conditions this will succeed is still more or less in an experimental stage. Formerly smudging was used considerably and this was generally practiced before daylight; heavy smoke sufficient to cover the entire orchard was furnished, and the trees had a chance to thaw out before sunlight struck them. This probably would not be an assurance against freezing, and at times frosts become so severe as to be virtually a freeze. Under certain conditions heating will be a prevention against freezing. Often oil pots are used. It will take from 40 to 150 pots to the acre, according to climatic conditions, type of fuel used, etc. A gallon of oil will last from three to six hours. Be careful in selecting the oil; ordinary locomotive oil is unsatisfactory. There is one oil put on the market that is guaranteed to contain only 2 per cent water, and may be purchased for a few cents per gallon. This is said to be very good. Some use distillate, but the latter may be more expensive. When one feels fairly certain that frost is to be experienced it would be well to start the pots before the temperature gets down to the freezing point, as it is easier to maintain a certain temperature than to raise an already low temperature to the safety point. Where large amounts of oil are to be used it will be necessary to provide some container; wooden tanks are often unsatisfactory. Cement tanks have been tried and when well constructed are fairly satisfactory. Galvanized iron tanks are used considerably. Heavy oil at times will not flow or pump easily, and will need to be removed by gravity. It should be placed in pots in the orchard and a flannel cloth or similar material which has been soaked in kerosene used for lighting the pots. The most dangerous times for frost and frost injury are apt to be from 2 o'clock in the morning until usually after sunrise.

There are many orchardists in the Northwest who have made the mistake of planting varieties that are not adapted to their locations, and under such circumstances the trees should be grafted or budded over to some other varieties. There is considerable demand for information from time to time concerning the method of handling nursery stock. I will say that with nursery stock, budding is practiced more commonly than grafting. Pears, peaches, prunes and cherries are nearly always budded. In this climate the budding is generally done the latter part of the summer, at the time the bark will slip nicely. This time varies according to elevation, soil, and similar conditions. Occasionally spring budding can be practiced, although it is not to be recommended for general practice. The grafting of young nursery trees is generally performed by what is known as the bench graft. This is simply a modi-



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fication of the whip graft, and in irrigated sections it is often possible to grow a large tree from a piece root. In Western Oregon and in most unirrigated districts we would much prefer to use the whole root for either bud or graft. Where piece roots are used it will often take more than one season to obtain desirable trees.

The form of budding usually employed is what is known as the T or shield bud. It is inserted on the north side of the tree, generally just above the ground. Make a vertical cut from an inch to an inch and a half long and then a horizontal cut about one inch in length. With the back of the knife or some smooth instrument turn back the portions of the bark that have been loosened by making the T cut. Obtain a bud which you will find in the axil of the leaf. In cutting this, we leave just enough wood to give it firmness to insure easy handling. Slip the bud in under the flaps that were rolled back, tie securely with raffia or yarn until the bud has taken, which will be about two weeks. After the bud has taken securely the bands for tying are loosened by simply slitting with a knife on the side of the tree opposite the bud. In the spring of the year, generally before the growth starts, the tree is cut off just above the bud, and this forces growth into the latter, which will grow into a shoot immediately. This same method of budding can be used in working over the branches of a young tree that is from two to five years of age when you wish to top-work it with other varieties. This system can also be used to advantage when we cut back old trees quite severely and allow sprouts to grow, and wish to bud the sprouts. The whip graft can be used in root grafting and top-working young trees and shoots. In using this we prefer small twigs, not over one-half inch in diameter. A slanting cut is made on the stock and then a tongue cut into that. A cut of similar angle is made on your scion and a tongue cut in that. The two tongues are forced firmly together, the graft firmly tied, and in many cases waxed, certainly so if above the ground. It is done during the winter for root grafting and just before the shoot sprouts in the spring for top-working. While one can work over trees after the leaves have attained considerable size, it is advantageous to have the scions dormant in any case. They can be kept dormant by cutting in January and February and stratifying in sand. Be careful not to let them get too moist or they will decay, and if they are too dry they will shrivel. Occasionally it is necessary to place scions on ice in order to keep them dormant. Especially is this often practiced on walnut scions.

In working over old trees a number of methods can be tried. A common way where large branches are cut back is to use what is known as bark grafting. The scions are cut sloping at the base and the smooth surface slipped down between the bark and the wood of the stock. These are tied in securely

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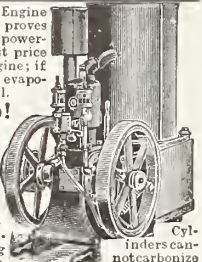
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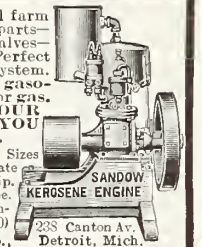
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and waxed carefully. Use this method for large cuts. For medium sized cuts the cleft graft is to be recommended. In the cleft graft we saw off the branch to be grafted and generally split it in the center wide enough to allow the entrance of two scions, one for each end of the cut. For this kind of grafting a special tool is necessary for splitting, and you will need a wedge or two to keep the stock open until the scion is inserted. Choose scions from last year's growth, using lengths containing about two buds. The scion is cut in the form of a wedge, the narrower edge of the wedge to point inward. In placing the scions put them so that the growing surfaces will come in contact with that of the stock. In some cases it is well to wax over the ends of the scions. All wounds should be very carefully waxed.

Many people make the mistake of grafting successfully and then allowing the grafts to take care of themselves. You will need to watch them very carefully when young. They are often attacked by insects that will eat out the buds. In most cases you will only need to allow one scion to grow; however, we occasionally allow two to remain for a couple of years in order to help callous over large wounds. The grafts should be headed back the first summer early in July, otherwise they will run up a rank growth and become too high headed, and there is also greater danger from strong winds, birds, etc. By heading back, laterals are forced out and you can develop a strong spreading tree. The grafts should be pruned the first few years in much the same way that the young trees are handled. There are many methods of grafting trees, all of which have considerable merit and all of which may be recommended, whenever they can be prac-

ticed successfully. In a publication of this kind it is impossible to go into detail, but some simple practices that the average man can use have been outlined.

Walnut grafting is more or less of a difficult proposition. Many men have been successful for a year or two and then have made a dismal failure in succeeding years. One of the most successful men in this locality has been Mr. George C. Payne of Campbell, California, and the methods that he has used are outlined in the following description: "For scions select round wood, with buds not too far apart. Use upright or horizontal wood and never drooping wood. Avoid terminal buds. Spurs on young trees a foot or less in length make good wood. When possible leave scion wood on trees until two or three weeks before they show signs of

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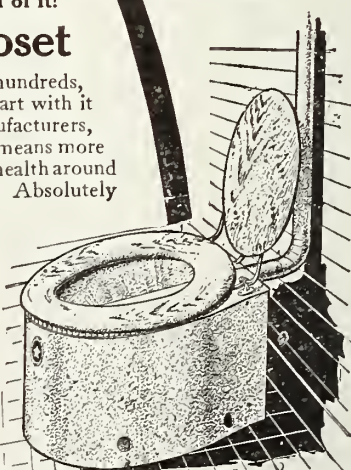
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starting, which would be about April 1 to 10. Cut in lengths from 12 to 14 inches and stratify carefully in sand. Before grafting, wait until buds on stock show signs of bursting. If placed in position before the sap starts they may dry out. One can start in earlier on English walnuts than on blacks, but blacks will permit a longer grafting season. Bright, extra sharp tools are necessary. Good knives are the IXL, the Henckel, budding knife, large size, Joseph Rogers' iron handled grafting knife; and a shoemakers' knife is very desirable. For a splitting knife use Rogers' butcher knives. A splitting maul like an old fashioned potato masher is good, dimensions 11x4½x3. Hickory or hardwood wedges, 6 inches in length, of different widths, are desirable for splitting. Have the edges a little thinner than the center. Have a sharp saw. Use oil stones, emeries, etc., to keep tools always sharp. Never make a concave cut on scion. Choose a piece of wood having two eyes, of straight growth. Cut off 2½ inches below bud, with slanting cut. Turn lower bud upward. Begin with knife on opposite or a little lower than bud. Cut just through the bark to wood. Continue downward, very gradually cutting deeper, until two-thirds of cut is completed. The remaining one-third is cut considerably more abrupt. Turn the scion over and treat the other side the same. Have scion a little thicker on the outside. After scion is cut, prepare stock. Saw off straight, then take butcher knife and split very lightly through center, then bear heavily on handle of knife and split the opposite side of stock. Now drive in wedge. One must now carefully fit stock to scion. It is generally necessary to cut out a little wood on each side of split in such a way that when wedge is released the scion is caught firmly and perfectly. The scion should be inserted as with other grafts, so as to bring growing layers together. Next, stuff newspaper down in the chink between the two scions. Now wax. Cover entire cut surface. It is fatal to leave it exposed. It is sometimes necessary to rewax three or four times. If scion buds are slightly covered with wax it will do no harm. After waxing, tie an inflated paper bag over graft, leaving an inch or two for scions to grow. In the nursery the work is done at the same season as top-working. When possible avoid doing the grafting in the early morning hours or following a heavy rain, for at such times considerable bleeding may take place. Pick away the dirt from around the tree with a sharp band shear, cut off the tree about two inches above the ground. In making the cut always have the

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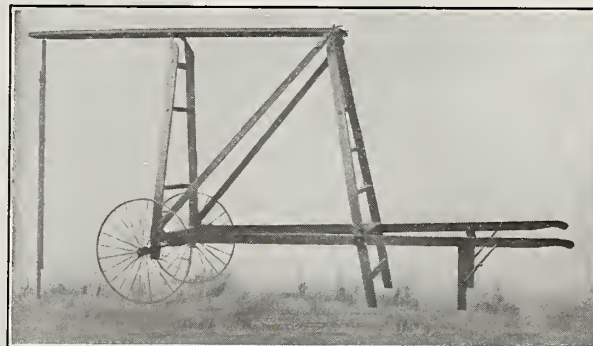
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North Portland, Oregon

blade down. Then with a shoemaker's knife make a vertical cut from an inch to an inch and one-half in length, the cut terminating at the stub of the stock. The cut is very shallow at the lower end and ends deeply at the center. Now make a cut at right angles to the first. The result will be that you will take out a right-angled piece from the stock, the cut being broad and deep at the top and shallow and drawn to a point at the lower end. A scion is so cut as to fit this right-angled notch in the stock very closely. First cut the scion off sharply, then make a cut at right angles to this, which will be from an inch to an inch and one-half in length. Draw it in slightly toward the point. If the scion and stock do not fit absolutely smooth, make new cuts until you get a true, smooth connection. Now take some coarse twine or yarn and wrap the two together securely, finally tying with a half hitch. This being done, wax over very carefully, probably at least two or three times, as per directions given for cleft grafting. Use paper bags and treat as in previous method."

During the early years of the orchard one will need to watch out continually for certain animal pests. Rabbits at times become quite destructive. There are several methods of controlling them. One method is to put in a rabbit fence, but this is quite expensive. Another method is to protect the base of the trees with wire gauze used as a screen; some authorities report that they have kept rabbits away from trees by rubbing the bark with hog or sheep liver. Rats and mice are apt to be found in alfalfa sod lands. They are very hard to control; perhaps one of the most satisfactory methods is to use poisoned grains, carrots, etc., soaked in strychnine or arsenic. Traps can be used to advantage at times. The problem, however, is a vexatious one and needs constant study. Often gophers can be shot to good advantage, as they generally have definite periods when they come out, and sometimes it is necessary to go to the extremes of watching and timing them. We have found this quite effective in some of our work at the college. It does not necessitate long hours of waiting, as when we see them at certain hours we can jot it down and then get them the next day. Flooding has been tried on ground rodents where irrigation is practiced, with more or less success.

In some sections of the state sun scald becomes serious, especially in those sections where the light soils reflect light and heat too pronouncedly. It generally occurs during the spring of the year when there is an unequal range of temperature, the days being warm and the nights cold. It occurs at times in summer on the main branches of the trees. It is generally confined to one side of the tree and may lead to other complications, such as attack of borers or certain diseases and the like. In regions subject to sun scald the young tree should be protected during the first few years by placing a slab or board on the south side of it. The buds

We are now selling tracts of 5 acres or more in our final and greatest planting at Dufur, Wasco County, Oregon.

5,000 Acres All in Apples

Over 3,000 acres of it has gone, mostly to Eastern people. The remainder will be gone by spring.

We plant and develop for five years, guaranteeing to turn over to you a full set, perfectly conditioned commercial orchard. After the expiration of the five years we will continue the care of your orchard for you, if desired, for actual cost, plus 10 per cent.

Planting and care is under supervision of the

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Spalding Building, Portland, Oregon
The largest and most experienced planters in the Pacific Northwest

We will be glad to meet personally, or to hear by mail, from anyone considering the purchase of an apple orchard or apple land. On account of the bigness of the project, everything is done on a wholesale basis and prices for our tracts are proportionately lower. Reasonable terms. All our purchasers are high class people. No others wanted.

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Has no peer in the Northwest

And so we have established

THE FRUIT JOURNAL

along similar lines in behalf of the great irrigated fruit districts of the Rocky Mountain region, a companion paper to this, your favorite fruit magazine.

We have made it up-to-date, clean, high class editorially, mechanically and pictorially.

The subscription rate is \$1.00 per year. It is worth it.

THE INTERMOUNTAIN FRUIT JOURNAL

Grand Junction, Colorado

of the tree can be protected from sun scald by proper pruning. Where injury has taken place from sun scald the wound should be cut out to clean live tissue, then thoroughly sterilized and cleaned out and sealed over with walnut grafting wax.

Portland's Annual Fiesta

The Sixth Annual Rose Festival will be held in Portland, Oregon, June 10 to 15. Of all the different festivals and conventions that have been held in various cities of United States there are none that surpass the Portland rose show. Roses and flowers are something in which everybody is interested and the climate of the Northwest is particularly adapted to the culture on account of the lack of severe hot weather in summer and the lack of severe cold weather in winter. The rose show in addition to being a wonderful sight is very educational. Its influence is good. It promotes desire for propagation of flowers. Flowers lend beauty to every home and make the lawn and grounds around the house attractive. The more one sees of flowers the stronger the desire to grow them, and roses are the most beautiful of all flowers. Every fruitgrower in the Northwest will find a welcome in the City of Portland during the wonderful festival. Every fruitgrower should attend. Below we publish a list of the principal hotels and theatres, which will be of value to the fruitgrowers desiring to attend. Portland hotels, with number of guest rooms of each: Alder, 117; Ansonia, 58; Burton, 131; Belvedere, 75; Bowers, 180; Calumet, 170; Carlton, 200; Cornelius, 125; Eaton, 70; Esmond, 119; Foster, 200; Franklin, 80; Garland, 30; Gordon, 50; Grant, 52; Houston, 75; Idora, 72; Imperial, 300; Irving, 30; Lenox, 90; Levens, 70; Madras, 68; Majestic, 50; Medford, 75; Multnomah, 544; Netherlands, 72; New Osborne, 40; New Perkins, 165; New Scott, 84; Oakley, 70; Oregon, 350; Peer, 77; Philip, 62; Portland, 350; Ramapo, 115; St. Charles, 110; Sergeant, 100; Savon, 48; Seward, 150; York, 65; Whitehall, 50.

Portland theatres: Heilig, Seventh and Taylor; Bungalow, Twelfth and Morrison; Baker, Eleventh and Morrison; Lyric, Fourth and Stark; Orpheum, Sixth and Morrison; Empress, Park and Washington; Pantages, Seventh and Alder; Oaks Amusement Park, The Oaks.

California Borax Production

California is the only state which makes a commercial production of borax annually. The output for 1910 according to the United States Geological Survey was 42,357 short tons, valued at \$1,201,842. Less than four tons was imported. About one-half of the borax consumed is used in the enameling industry for making kitchen and sanitary ware. Each year some new use is found for the mineral.

The Kimball Cultivator

**BEST IMPLEMENT
FOR ORCHARD CULTIVATION**



Kimball Cultivator at Work in Orchard at Morrisania

For maintaining a dust mulch in an orchard and for keeping down weeds the Kimball Cultivator is without an equal. Its blades cut about three to four inches under the surface of the soil, pulverizing the soil and leaving it level; all weeds are cut and germination of weed seeds prevented by leaving the soil in loose condition.

The Kimball Cultivator works well out from the horses, and soil can be stirred close to trunks of trees, with horses walking out in the open. The Kimball takes a wide sweep at a time, and eight to ten acres of orchard can be cultivated per day. Thousands of Kimball Cultivators are now in use, and every person who has one recommends it. Mr. Irvine, editor of *The Fruit-Grower*, used two Kimball Cultivators at Morrisania last season; ask him what he thinks of them. Ask him also if the Kimball is not an ideal cultivator for any part of the country; he will tell you it is an ideal soil-stirring implement.

Clean Cultivation of Orchards Pays

It not only conserves moisture, but destroys the hiding places of insects, such as *curello*, which are often serious orchard pests. Apples grown in cultivated orchards ripen later and consequently keep longer; they are of larger size and are usually smoother. The cost of cultivation is not excessive if Kimball Cultivators are used. Send for free booklet describing this great orchard implement—it's free for the asking.

W. A. JOHNSTON, Manufacturer
THE DALLES, OREGON

Find Out About the Forkner Light-Draft Harrow!



THIS low-priced harrow for orchards and vineyards—and general use—is a world-beater. Wonderfully light of draft—weight carried on wheels, not on horses' necks. Great worker—20 to 30 acres a day with one team—and every inch of soil cultivated thoroughly—lifted and turned in long wavy level. Best of all—it hangs low and has great extension—making it a snap to work right up to trees without horse or driver disturbing boughs or fruit.

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WRITE TODAY for catalog and 30 day trial offer. Pick the machine suited to your soil and orchard and use it for a month—and send it back if you don't find it the finest cultivator made.

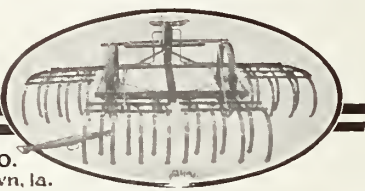
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"Modern Orchard Tillage"—written by highly successful orchardist—contains information that may be worth hundreds of dollars to you. Sent for the asking.



Light Draft Harrow Co.

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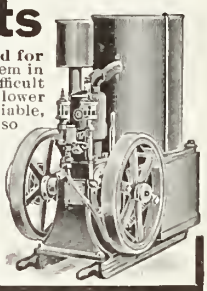
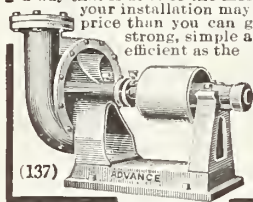


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AMAZING DETROIT Kerosene Engine

in combination with just exactly the right pump adjusted and arranged in just exactly the right manner for your particular work. If you want advice as to how to proceed to get the best results with the least investment and cost of operation, write us at once, giving full and complete details, addressing your letter to our Irrigation Specialist, Detroit Engine Works, P. O. Box 506, Detroit, Mich.



Why Do We Sell Cull Fruit?

A. C. Rulofson in California Cultivator

YOU all know your end of the orange business and I could not tell you anything about the growing and packing of citrus fruits, but I believe, from the standpoint of the consumer, I have observed points that you have overlooked or possibly not considered, and I am going to try and show you how the marketing of oranges appears from the consumer's standpoint. Please remember that this is a friendly criticism by a native Californian who is as much interested in the upbuilding of your industry as you possibly can be yourselves; therefore please accept what I say in the friendly spirit in which it is intended.

A beautiful golden orange will suggest California just as surely as day will suggest the sun. No matter where that orange is seen, whether on the barren wastes of the great American desert, in Alaska's frigid climate or

in the wilds of Africa or the table of the luxurious hotels of our great American cities. The suggestion of California, the golden state, that produces everything that delights man, is immediately presented to the mind; in fact the golden orange and the golden state are synonymous, and it is perfectly natural for the traveler to expect to find citrus fruit in its greatest perfection right here. I have heard tourists on the train en route to California caution their children not to eat the inferior fruit on sale by the train agents, explaining, "Wait until we get to California where oranges grow. We will get the finest on earth there." But do they get the best there? And is the best quality of citrus fruit available at our coast markets or on the fruit stands, or is it served at our best hotels? Is the frost-bitten or windfalls, which are served at the hotels and restaurants, the proper quality to mold the opinion of the stranger within our gates? Do you believe that the fruit served today in the hotels and restaurants of San Bernardino is a criterion of the quality of fruit raised in Southern California? If it is not, then is it not a great mistake to serve such fruit to the stranger? When the tourist goes to the fruit stand and is given fruit that is inferior to that which he buys in Chicago or New York does it reflect credit on your industry? Does it

advertise the state to the best advantage? I believe that you will agree with me that it does not.

California is probably better advertised than any other state in the Union, that is, it has been more successfully advertised. So why not live up to the reputation that this broad advertising has given us by offering the tourist who has come here through this advertising a fruit that is commensurate with the state's reputation. Can money be spent for advertising to any better advantage than in the distribution of fancy fruit as a means of sustaining California's supremacy? Will culls, frozen fruit, windfalls convince visitors that we raise the finest citrus fruit in the world? No! With one exception there is not a hotel in the state, at least to my personal knowledge, which offers its guests the fruit that has made the state famous. The Glenwood Hotel at Riverside inaugurated the practice of always having a large bowl of choice oranges at the entrance to the dining room with the polite invitation to their guests to take one, and I have heard this little courtesy mentioned in the most complimentary way all over the Eastern States, and no advertising that the hotel could do at any expense of many thousands of dollars would be as effective as this simple, inexpensive courtesy, and at the same time it is advertising the orange industry to the very best advantage. If this practice were followed by other large tourist hotels and only strictly first class fruit offered, wouldn't every recipient remember the courtesy and the fine

YAKIMA COUNTY HORTICULTURAL UNION

North Yakima, Washington

C. R. Paddock, Manager

Apples, Pears, Peaches, Cherries
Plums, Prunes, Apricots, Grapes
and Cantaloupes

Mixed carloads start about
July 20. Straight carloads in
season. Our fruit is the very
best grade; pack guaranteed

We use Revised Economy Code

Spruce Box Shooks

IN CAR LOADS

NORTHWESTERN LUMBER COMPANY

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Prompt Shipments

Rid Your Land of Gophers

RATS, MOLES, SQUIRRELS. A 10-year old boy can do it with this "CINCH" TRAP



Users kill hundreds in one season with one trap.

No gun, no poison, no bait. Absolutely safe. Made entirely of steel. Guaranteed. **Your money back if it's not the best trap you ever saw or heard of.** TRIAL TRAP SENT POST PAID TO YOU FOR \$1.00 BY **EUREKA SALES CO.** Box No. 24, PORTLAND, ORE. (Mfd. by Wyman Emerson Co., Gaston, Ore.)

quality of the fruit and speak of it time and again en route home, at home and on future travels.

When a train passes through San Bernardino, the home of the National Orange Show, passengers naturally expect to stop over and buy oranges in what they consider the home of the orange, and where they expect to find the best produced in all the world. Strange to say, so far as I know, there are no oranges offered for sale on the platform. There should be uniformed boys there to extend the glad hand of welcome to these tourists when they arrive at the portals of California, and there should not be only oranges but the ladies should be presented with a sprig of orange blossoms, which many of them have never seen, not even on their bridal veils, and are looking forward with pleasant anticipation to the time when they would arrive in California and see the much heralded orange blossom. What a great opportunity you are losing to advertise San Bernardino by not impressing on their mind that it was at this beautiful little city that they first saw an orange blossom and that it was given to them free.

What a magical word is "free." If you don't believe it come around to my booth tomorrow where I am giving free souvenirs, oranges, etc., and you will find out why there is always such a crowd around my booth. But I digress; when these passengers get off the train what do they get? If they find any fruit at all offered for sale it is of the cheapest and most inferior grades which the shipper would not send to his Eastern distributing agents. Why would it not pay him as well, if not better, to sell his fancy grades to the local hotels, fruit stands, etc. Surely there is a demand for the very best grades here. I myself have experienced difficulty in obtaining first class fruit to send to my Eastern friends, and if I cannot get it at the National Orange Show where would I get it? When I ask for an explanation I am told it is not possible to buy fancy fruit here—it is all shipped east. Recently a gentleman prominently connected with this show had occasion to send me by mail a sample orange; it was accompanied by a letter of apology which read, "You know we cannot get good oranges here; we have nothing but culls." Now this was written on the stationery of the National Orange Show of California. Is it not about time that somebody called this matter to your attention?

Yesterday, between church and baseball time, I had a couple of hours that I spent walking around this city. I examined all the oranges on sale at the various fruit stands and I didn't see one that I would give to my worst enemy. I did, however, observe large quantities of the very finest bananas that I have ever seen anywhere, and they were being sold very rapidly at fifteen cents a dozen. Is it any wonder that your own people will prefer bananas at fifteen cents a dozen than mangy oranges at from twenty-five to

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And it is guaranteed to give entire satisfaction by our half century of experience in the manufacture of roofings and our reputation to never break a promise or shirk an honorable obligation.

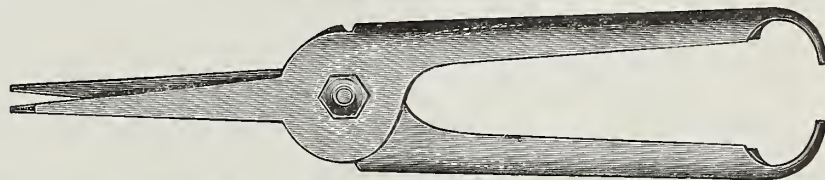
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Reliable Nursery Stock

Having enjoyed a very large business the past season, we wish to announce that we are better prepared than ever for the season of 1912-13.

The number of reports on file from customers as to the fine quality of the stock received tells the tale. They received thrifty, well rooted, non-irrigated trees. They ordered quality and got it. They were well pleased, and they will be even better pleased when their trees reach maturity.

There is such a thing as buying a tree because it is offered cheap. This is an experiment, a waste of money.

Quality and a fair price are the rules of our business.

We offer a flattering opportunity to any live, reliable man to join our selling force, enjoying a good income and obtaining a course in Horticulture, placing him on a professional basis.

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The Washington Mill Company, of Spokane, Washington, is leading in the betterment of fruit boxes, by using the BILLINGSLEY PATENT MACHINES.

The Anaconda Copper Mining Company are installing our system at Hamilton, Montana, and will be ready for the coming fruit season.

Ask your dealer for PANEL-END BOXES, lightest, handsomest, strongest—forms a good hand-hold at both ends of box.

Substantial millmen are requested to correspond with

Billingsley Box Machine Company, Ocala, Florida

WE HAVE ONLY A FEW THOUSAND OF THOSE

Yellow Newtown, Spitzenberg, Ortley, Arkansas Black and Winter Banana

that you saw a photo of in the October and November issues. We have some small lots of other leading varieties, as well as pears, cherries and peaches.

Bear in mind that these trees were all grown on well drained virgin soil, on No. 1 whole roots, all buds selected from the best bearing trees in Hood River, and we guarantee every tree true-to-name. You can save agent's profit if you buy direct from us.

Write at once for prices, before it's too late. Address

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SEATTLE

LOS ANGELES

fifty cents a dozen. This condition exists in the apple and strawberry raising districts, and it is a deplorable state of affairs. The best is sent away and the home of the fruit suffers as a consequence by not being able to live up to its reputation when visitors knock at the door. To be sure, the Eastern purchaser outnumbers the visitor, but we must not forget that it is the tourist who invests his money in the fruit land. It is the visitor whom we try to induce to adopt California as his home, who puts his capital into these orange groves, employs labor and promotes prosperity. So let us treat that visitor in a way that will convince him that we not only grow the finest, juiciest, most luscious oranges in all the world, but at the same time they are not too good for the people of the Pacific Coast.

Another point. The people of California have the reputation of always wanting the best and always having the price to pay for it. It therefore seems, from my standpoint, that the Pacific Coast people would pay just as much for your citrus fruits as you can possibly get for it in the East, and certainly the freight to any point on the Pacific Coast is not as high as it is to Eastern points. Therefore it seems to me that the profit accruing to the shippers and orange growers would be greater on the fruit sold on the coast than that shipped east. If I was a packer I would at least try to market my production on the coast, and I would see to it that it was the best shipped out of Southern California.

Getting Rid of Gophers

POCKET gophers live almost entirely within the subterranean tunnels which they excavate when bringing fresh soil to the surface. The often repeated statement that they are strictly nocturnal is untrue. They are most active in morning and early evening, but when the weather is cool and not too dry they work from dawn to sunset, and probably continue during much of the night. They sometimes burrow surprising distances within twenty-four hours, as is evidenced by the number of fresh mounds of earth thrown out in that time. In hot, dry weather they do little digging, and most of their activities are noticed in the gentle springtime when nature is busy in her pro-creative processes.

We have found that by scattering a small amount of sulphur and air-slaked lime in the hole when planting trees that it will save most of them. Occasionally, however, a gopher will get in and damage a tree. It is much better to start early in the season and poison the gophers, using raisins, prunes, carrots, parsnips or other vegetables in which has been inserted a few crystals of sulphate of strychnine. We find it comparatively easy to rid a field of these gophers by carefully going over it two or three times each week early in the season with these pieces of poisoned bait.

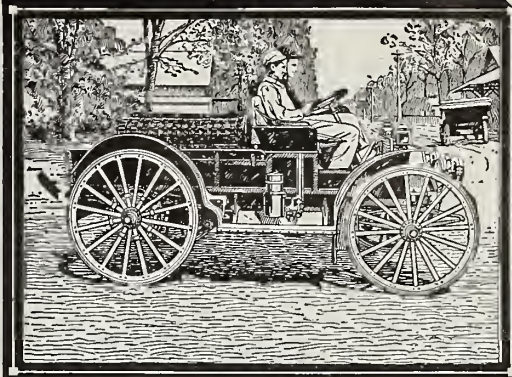
The runways are best located with a sharp, round stick about the size of a fork handle. Push this into the soil until the run is located, where the poisoned vegetable may be inserted and the opening covered with earth packed by the feet. A large field may thus be treated in a single day after the gophers begin work in the spring. Steel traps and a gun in the hands of an active boy will depopulate the gophers on a ranch, provided a small home-made bounty is paid for their scalps. The striped gopher, the ground squirrel and flickertail, as well as the prairie dog, may be poisoned with strychnine. The contents of a small bottle, which may be obtained at almost any drug store, usually contains sixty grains of the poison. This is sufficient to poison a quart of grain, corn preferred.

Dissolve the poison in hot water, which should be allowed to stand twenty-four hours, as the drug does not readily dissolve in water. A small quantity of vinegar or alcohol will aid in making the solution. Fill a quart glass jar with grain and pour in poisoned water. The kernels of corn may be deposited with a spoon in the holes inhabited by the gophers, where it will be consumed and result in immediate death to the rodent. Do not scatter the poisoned grain on the surface, because such carelessness is prohibited by state laws and is quite sure to result in killing many birds and possibly some of the domestic animals on the premises.—Field and Farm.

Powell's Deserved Success

Another instance of the brilliant success which scientists in the government employ sometimes achieve is given by the election of G. Harold Powell to be general manager of the California Fruit Growers' Exchange, which markets about sixty per cent, or 30,000 carloads annually, of the oranges and lemons grown in California. Mr. Powell made his mark in the Department of Agriculture, and when acting as chief of the Bureau of Plant Industry in the absence of Professor Galloway in Asia he was offered the post of secretary and manager of the Citrus Protective League at a salary said to be \$10,000 a year. His management was so successful as to create favorable comment all over the country. Mr. Powell is distinctly a progressive scientist. He is also intensely practical, a diplomat and a keen judge of men. The citrus fruit-growers intend to have an exhibit at the San Diego Exposition, and it will probably be the lot of Mr. Powell to direct its scope and character. The exchange made a new departure when, as an association of fruitgrowers, it began advertising its fruit. Its success is indicated by the fact that this year its advertising appropriation is one hundred and fifty thousand dollars, all of which is going to newspapers of established reputation, to tell of the "Sunkist" brand.

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TRIPS ²/₃
MEAN MORE
TRIPS ^{AND}
BIGGER
PROFITS**



WITH an International Auto Wagon you can make a trip in one-third the time that you can with a team. You can catch the early trains or boats and the early markets. You can go to whatever market pays you best—10, 15, or 20 miles is practically nothing for an International. And you can keep your horses working in the field. The

International Auto Wagon

is always ready, winter and summer, 24 hours a day if necessary. Roads, hills, sand, or weather do not stall it—it never tires.


The wheels are sufficiently high to give abundant road clearance. The solid rubber tires eliminate tire troubles and expense. There are no delays or expense on account of punctures and blow-outs. The air-cooled engine does not freeze in winter. The International Auto Wagon will give you more service than you could secure in any other way for the amount invested. Whenever desired, it can be converted into a pleasure vehicle by adding an extra seat and top.

There are many International Auto Wagons in the hands of farmers and fruit-growers all over the country. Let us send you facts and figures showing what they are doing. Write nearest branch house for catalogue and full information.

WESTERN BRANCH HOUSES: Denver, Col.; Helena, Mont.; Portland, Ore.; Spokane, Wash.; Salt Lake City, Utah; San Francisco, Cal.

International Harvester Company of America
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PRUNING SHEAR**

Pat'd June 2, 1903.

RHODES MFG. CO.,
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made that cuts
from both sides of
the limb and does not
bruise the bark. Made in
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Write for
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LOW FACTORY PRICES We furnish the highest grade bicycles. It is possible to make at one small profit above actual factory cost. You save \$10 to \$25 middlemen's profits by buying direct of us and have the manufacturer's guarantee behind your bicycle. **DO NOT BUY** a bicycle or a pair of tires from anyone at any price until you receive our catalogues and learn our unheard of factory prices and remarkable special offer.

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SECOND HAND BICYCLES—a limited number taken in trade by our Chicago retail stores will be closed out at once, at \$3 to \$8 each. Descriptive bargain list mailed free.

TIRES, COASTER BRAKE rear wheels, inner tubes, lamps, cyclometers, parts, repairs and everything in the bicycle line at **half usual prices**. *DO NOT WAIT*—but write today for our *Large Catalogue* beautifully illustrated and containing a great fund of interesting matter and useful information. It only costs a postal to get everything. **Write it now.**

MEAD CYCLE CO. Dept. L345 CHICAGO, ILL.

Northwest Fruit Growers' Unions and Associations

We publish free in this column the name of any fruitgrowers' organization. Secretaries are requested to furnish particulars for publication.

Oregon

Eugene Fruit Growers' Association, Eugene; Ashland Fruit and Produce Association, Ashland; Hood River Apple Growers' Union, Hood River; Milton Fruit Growers' Union, Milton; Douglas County Fruit Growers' Association, Roseburg; Willamette Valley Prune Association, Salem; Mosier Fruit Growers' Association, Mosier; The Dalles Fruit Growers' Union, The Dalles; Salem Fruit Union, Salem; Albany Fruit Growers' Union, Albany; Coos Bay Fruit Growers' Association, Marshfield; Estacada Fruit Growers' Association, Estacada; Umpqua Valley Fruit Growers' Association, Roseburg; Hyland Fruit Growers of Yamhill County, Sheridan; Newburg Apple Growers' Association, Newburg; Dufur Valley Fruit Growers' Union, Dufur; McMinnville Fruit Growers' Association, McMinnville; Coquille Valley Fruit Growers' Union, Myrtle Point; Stanfield Fruit Growers' Association, Stanfield; Oregon City Fruit and Produce Association, Oregon City; Lincoln County Fruit Growers' Union, Toledo; Rogue River Fruit and Produce Association, Medford; Mount Hood Fruit Growers' Association, Sandy; Northeast Gaston Farmers' Association, Forest Grove; Dallas Fruit Growers' Association, Dallas; Northwest Fruit Exchange, Portland; Springbrook Fruit Growers' Union, Springbrook; Cove Fruit Growers' Association, Cove; Santiam Fruit Growers' Association, Lebanon; Washington County Fruit Growers' Association, Hillsboro; Benton County Fruit Growers' Association, Corvallis; Sutherlin Fruit Growers' Association, Sutherlin; Brownsville Fruit and Produce Association, Brownsville; La Grande Fruit Association, La Grande.

Washington

Kennewick Fruit Growers' Association, Kennewick; Wenatchee Fruit Growers' Union, Wenatchee; Puyallup and Sumner Fruit Growers' Association, Puyallup; Vashon Island Fruit Growers' Association, Vashon; Mt. Vernon Fruit Growers' Association, Mt. Vernon; White Salmon Fruit Growers' Union, White Salmon; Thurston County Fruit Growers' Union, Tumwater; Bay Island Fruit Growers' Association, Tacoma; Yakima Valley Fruit and Produce Growers' Association, Granger; Buckley Fruit Growers' Association, Buckley; Lewis River Fruit Growers' Union, Woodland; Yakima County Horticultural Union, North Yakima; White River Valley Fruit and Berry Growers' Association, Kent; Lake Chelan Fruit Growers' Association, Chelan; Zillah Fruit Growers' Association, Toppenish; Kiona Fruit Growers' Union, Kiona; Mason County Fruit Growers' Association, Shelton; Clarksston Fruit Growers' Association, Clarkston; Walla Walla Fruit and Vegetable Union, Walla Walla; The Ridgefield Fruit Growers' Association, Ridgefield; Felida Prune Growers' Association, Vancouver; Grandview Fruit Growers' Association, Grandview; Yakima Valley Fruit Growers' Association, North Yakima; Southwest Washington Fruit Growers' Association, Chehalis; The Touchet Valley Fruit and Produce Union, Dayton; Lewis County Fruit Growers' Association, Centralia; The Green Bluffs Fruit Growers' Association, Mead; Garfield Fruit Growers' Union, Garfield; Goldendale Fruit and Produce Association, Goldendale; Spokane Inland Fruit Growers' Association, Kelso; Elma Fruit and Produce Association, Elma; Granger Fruit Growers' Association, Granger; Cashmere Fruit Growers' Union, Cashmere; Stevens County Fruit Growers' Union, Myers Falls; Dryden Fruit Growers' Union, Dryden; Apple Growers' Union of White Salmon, Underwood; Spokane Valley Fruit Growers' Union, Spokane; Spokane County Horticultural Society, Spokane; Spokane Highlands Fruit Growers' Association, Chester; Spokane District Fruit Growers' Association, Spokane; Cowlitz Fruit and Produce Association, Kelso; Kalama Fruit Growers' Association, Kalama.

Idaho

Southern Idaho Fruit Shippers' Association, Boise; New Plymouth Fruit Growers' Association, New Plymouth; Payette Valley Apple Growers' Union, Payette; Parma-Roswell Fruit Growers' Association, Parma; Weiser Fruit and Produce Growers' Association, Weiser; Council Valley Fruit Growers' Association, Council; Nampa Fruit Growers' Association, Nampa; Lewiston Orchard Producers' Association, Lewiston; Boise Valley Fruit Growers' Association, Boise; Caldwell Fruit Growers' Association, Caldwell; Emmett Fruit Growers' Association, Emmett; Twin Falls Fruit Growers' Association, Twin Falls; Weiser River Fruit Growers' Association, Weiser; Fruit Growers' Association, Moscow.

Colorado

San Juan Fruit and Produce Growers' Association, Durango; Fremont County Fruit Growers' Association, Canon City; Rocky Ford Melon Growers' Association, Rocky Ford; Plateau and Debeque Fruit, Honey and Produce Association, Debeque; The Producers' Association, Debeque; Surface Creek Fruit Growers' Association, Austin; Longmont Produce Exchange, Longmont; Manzanola Fruit Association, Manzanola; Delta County Fruit Growers' Association, Delta; Boulder County Fruit Growers' Association, Boulder; Fort Collins Beet Growers' Association, Fort Collins; La Junta Melon and Produce Company, La Junta; Rifle Fruit and Produce Association, Rifle; North Fork Fruit Growers' Association, Paonia; Fruita Fruit and Produce Association, Fruita; Grand Junction Fruit Growers' Association, Clifton, Palisade, Grand Junction; Palisade Fruit Growers' Association, Palisade; Colorado Fruit and Commercial Company, Grand Junction; Montrose Fruit and Produce Association, Montrose; Hotchkiss Fruit Growers' Association, Hotchkiss; Paonia Fruit Exchange, Paonia; Colorado Fruit Growers' Association, Delta; Crawford Fruit Growers' Association, Crawford; Amity Cantaloupe Growers' Association, Amity; Pent County Melon Growers' Association, Las Animas; Capitol Hill Melon Growers' Association, Rocky Ford; Denver Fruit and Vegetable Association, Denver; Fair Mount Melon Growers' Association, Swink; Fowler Melon Growers' Association, Fowler; Granada Melon Growers' Association, Granada; Grand Valley Fruit and Produce Association, Grand Junction; Independent Fruit Growers' Association, Grand Junction; Kouns Party Cantaloupe Growers' Association, Rocky Ford; Lamar Melon Growers' Association, Lamar; Loveland Fruit Growers' Association, Loveland; Manzanola Orchard Association, Manzanola; Newdale Melon Growers' Association, Swink; Roaring Fork Potato Growers' Association, Carbonale; Woods Melon Growers' Association, Las Animas; Western Slope Fruit Growers' Association, Palisade.

Montana

Bitter Root Fruit Growers' Association, Hamilton; Missoula Fruit and Produce Association, Missoula; Woodside Fruit Growers' Association, Woodside.

Utah

Farmers and Fruit Growers' Forwarding Association, Centerville; Ogden Fruit Growers' Association, Ogden; Brigham City Fruit Growers' Association, Brigham City; Utah County Fruit and Produce Association, Provo; Willard Fruit Growers' Association, Willard; Excelsior Fruit and Produce Association, Clearfield (Post-office Layton R. F. D.); Centerville Fruit Growers' Association, Centerville; Bear River Valley Fruit Growers' Association, Bear River City; Springville Fruit Growers' Association, Springville; Cache Valley Fruit Growers' Association, Wellsville; Green River Fruit Growers' Association, Green River; Farmers and Fruit Growers' Forwarding Association, Centerville.

New Mexico

San Juan Fruit and Produce Association, Farmington.

California

The Supply Company of the California Fruit Growers' Association, Los Angeles; California Fruit Exchange, Sacramento; Loomis Fruit Growers' Association, Loomis; Newcastle Fruit Growers' Association, Newcastle; Penryn Fruit Growers' Association, Penryn; Vacaville Fruit Growers' Association, Vacaville; Turlock Fruit Growers' Association, Turlock; Winters Fruit Growers' Association, Winters; Lincoln Fruit Growers' Association, Lincoln; Lodi Fruit Growers' Union, Lodi; Fresno Fruit Growers' Co., Fresno; Stanislaus Farmers' Union, Modesto; California Farmers' Union, Fresno; Sebastopol Berry Growers' Union, Sebastopol; Sebastopol Apple Growers' Union, Sebastopol.

British Columbia

British Columbia Fruit Growers' Association, Victoria; Victoria Fruit Growers' Exchange, Victoria; Hammond Fruit Association, Ltd., Hammond; Hatzie Fruit Growers' Association, Hatzie; Western Fruit Growers' Association, Mission; Mission Fruit Growers' Association, Mission; Salmon Arm Farmers' Exchange, Salmon Arm; Armstrong Fruit Growers' Association, Armstrong; Okanagan Fruit Union, Limited, Vernon; Kelowna Farmers' Exchange, Limited, Kelowna; Summerland Fruit Growers' Association, Summerland; Kootenay Fruit Growers' Union, Limited, Nelson; Grand Forks Fruit Growers' Association, Grand Forks; Boswell-Kootenay Lake Union, Boswell; Queens Bay Fruit Growers' Association, Queens Bay; Kaslo Horticultural Association, Kaslo; Creston Fruit and Produce Exchange, Creston.

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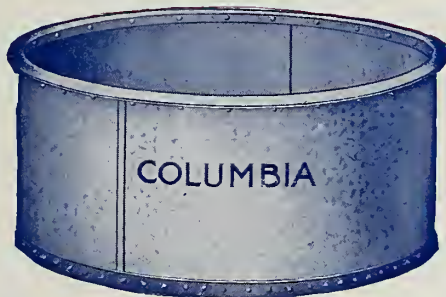
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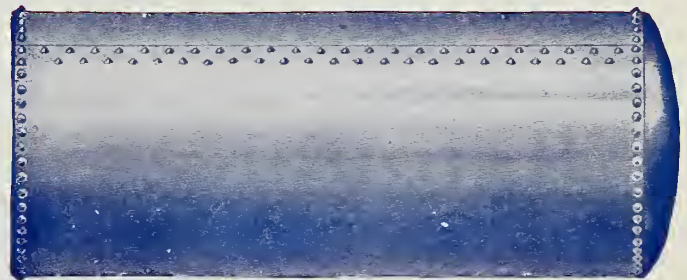


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